The MINING CONGRESS JOURNAL

Twelfth Annual Coal Convention and Exposition

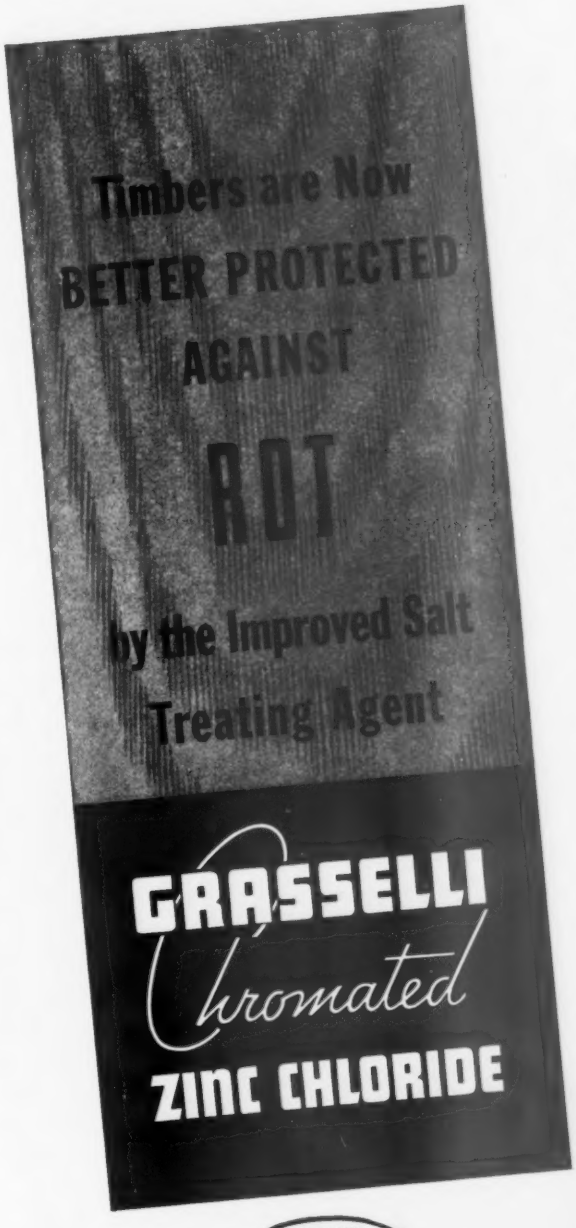
MAY, 1935

12th ANNUAL
COAL CONVENTION and EXPOSITION
COAL DIVISION...THE AMERICAN MINING CONGRESS
CINCINNATI, OHIO
MAY 13-17, 1935

SAFETY IN MECHANIZED MINING.
POWER DISTRIBUTION
CAR SHIFTING BEHIND MECHANICAL LOADERS.
TREATMENT BY OIL OR CHEMICAL TO IMPROVE QUALITY.
METHODS OF PREVENTING THEFT OF COAL IN TRANSIT.
SHAKING CONVEYOR LOADING.
MECHANICAL LOADING UNDER DIFFICULT CONDITIONS.
SAFETY PROGRAMS.
ANTI-FREEZING FOR WASHED COAL AT TIPPLE.
LOCOMOTIVE AND CUTTING MACHINE MAINTENANCE.
METHODS OF BREAKING DOWN COAL.
EFFECT OF SHORTER WORKING HOURS ON COSTS.
TIME CLOCKS AND RECORDING INJURIES
HANDLING OF CARS ON CONVEYOR LOADING.
STEAM GENERATORS.
MODERN TRUCK HAULAGE IN STRIP MINES.
HIGH POINTS IN COAL CLEANING IN 1934.
DEDUSTING
DEWATERING MINES.
FACE PREPARATORY METHODS.
OUTSIDE REFUSE DISPOSAL.
MODERN MAIN LINE HAULAGE.
MULTIPLE SHIFTING.
MODERN MINE VENTILATION.
HUMAN ENGINEERING.
LAYER LOADING FOR UNIFORM PRODUCT.
EUROPEAN METHODS
BRIQUETTING.

"PROFIT BY THE EXPERIENCE OF OTHERS"

A DEFINITE ADVANCEMENT IN WOOD PRESERVATION

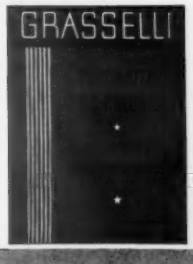


● For many years, mine and mill executives have been familiar with the superior preservative properties of zinc chloride, the standard salt treating agent for rendering wood ROT-PROOF. Its long established records have been definitely attested in varied commercial use.

Announcement has just been made of an improved zinc chloride—*Grasselli Chromated Zinc Chloride*. Its major constituent is Zinc Chloride, augmented with Sodium Bi-Chromate. This commodity, definitely, has increased preservative value.

Our new booklet tells all about it. Space permits only summarizing its many advantages here:

1. **It is a better preservative against decay.**
2. **It is a low cost commodity.**
3. **It acts as a repellent to termites.**
4. **It gives clean treatment.**
5. **It is odorless.**
6. **It permits satisfactory painting.**
7. **It is free of poisonous compounds, such as arsenic or volatile toxic organic materials.**
8. **It imparts measurable fire retardance.**
9. **The corrosion of hardware affixed to treated wood is practically no more than is the case with untreated wood under the same conditions of exposure.**
10. **It requires only conventional equipment for its use.**



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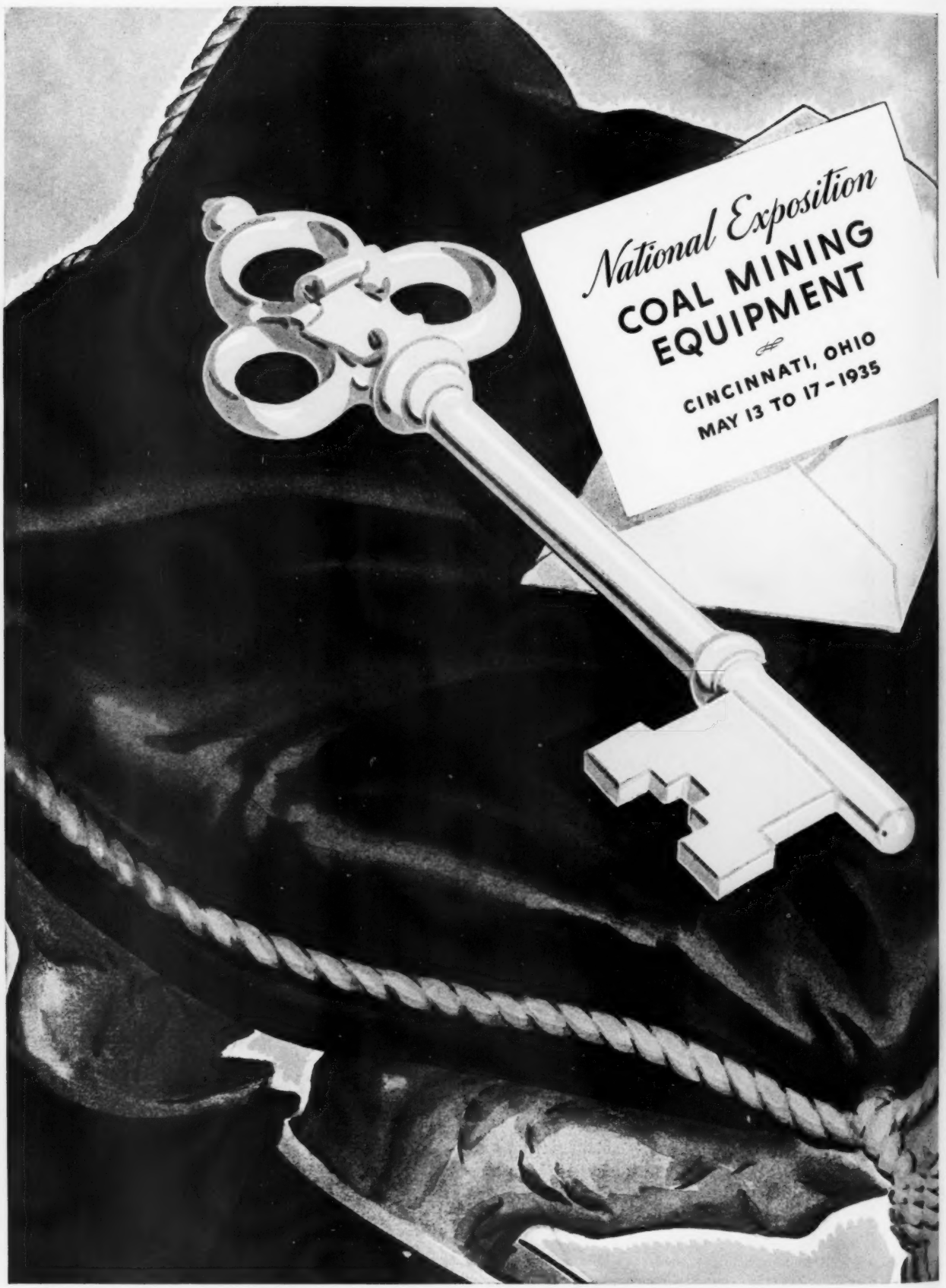
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COAL MINING
EQUIPMENT
CINCINNATI, OHIO
MAY 13 TO 17 - 1935

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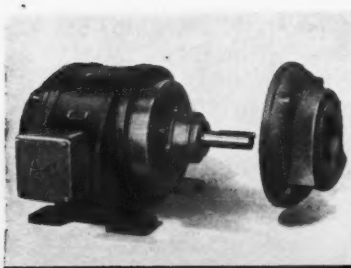
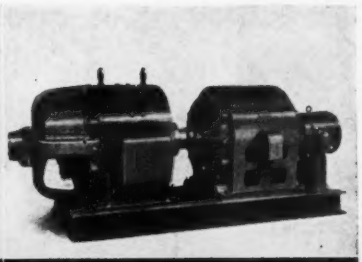
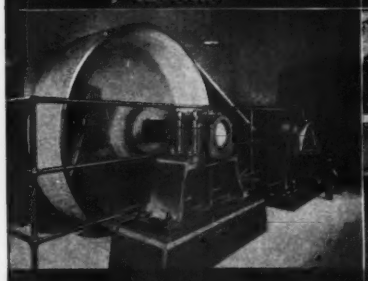
for Coal Mining and Preparation Plants



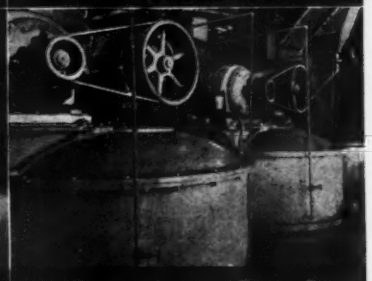
Splash-proof Induction Motor with Seal-clad Stator.



Motor-Generator Sets are built in all sizes and types.

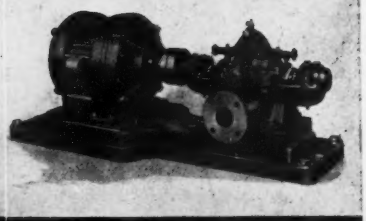


Allis-Chalmers Motor and Texrope Drive operating Mine Fan.

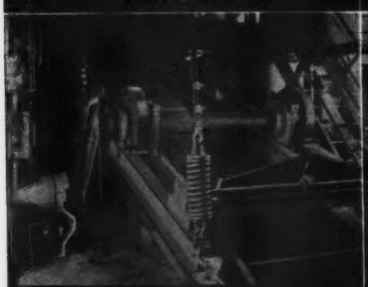


Allis-Chalmers Motors and Texrope Drives in Preparation Plant.

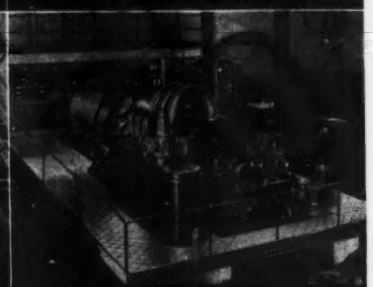
Solid Bronze Multi-stage Centrifugal Mine Pumping Unit.



Single Stage Centrifugal Pump for general water supply.



Double Deck Centrifugal Type Vibrating Coal Screen.



High Pressure Condensing Steam Turbine and Alternator Unit.

Motors Allis-Chalmers Motors for coal mining and preparation plants include not only, standard induction, synchronous and direct current motors, but motors with electrical and mechanical modifications to suit the drive, such as fan-cooled, splash-proof and drip-proof types. The larger motors include those for operating mine fans and large air compressors.

Pumps A complete line of centrifugal pumps is built by Allis-Chalmers for the coal industry. Many large all-bronze multi-stage pumps have been built for mine drainage, the first in 1908. They have given uniformly satisfactory service. Single-stage and close-coupled motor-pump units are built for general water supply.

Texrope Drives The Texrope Multiple V-Belt Drive provides a fully standardized, efficient and dependable means for transmitting power to mine fans, compressors, crushers, filters, shaker screens, picking and loading tables and conveyor systems with a reduction or increase in speed from 1:1 up to 7:1 ratio.

Texrope Drives operate on short centers and are silent, efficient, slipless—smooth starting and running—shock absorbing. Continuity of operation is assured as one or several belts may fail but machine can still be operated with remaining belts until replacement can be made.

Other Machinery Other equipment for mining and preparation plants include: double and single drum hoisting units; vibrating screens for sizing coal; motor-generator sets, mercury arc power rectifiers and rotary converters for d-c supply; Reyrolle Armorclad switchgear; switchboards and automatic control boards; transformers; blowers and compressors; and power plant equipment such as steam turbines, generators, condensers and many auxiliaries.

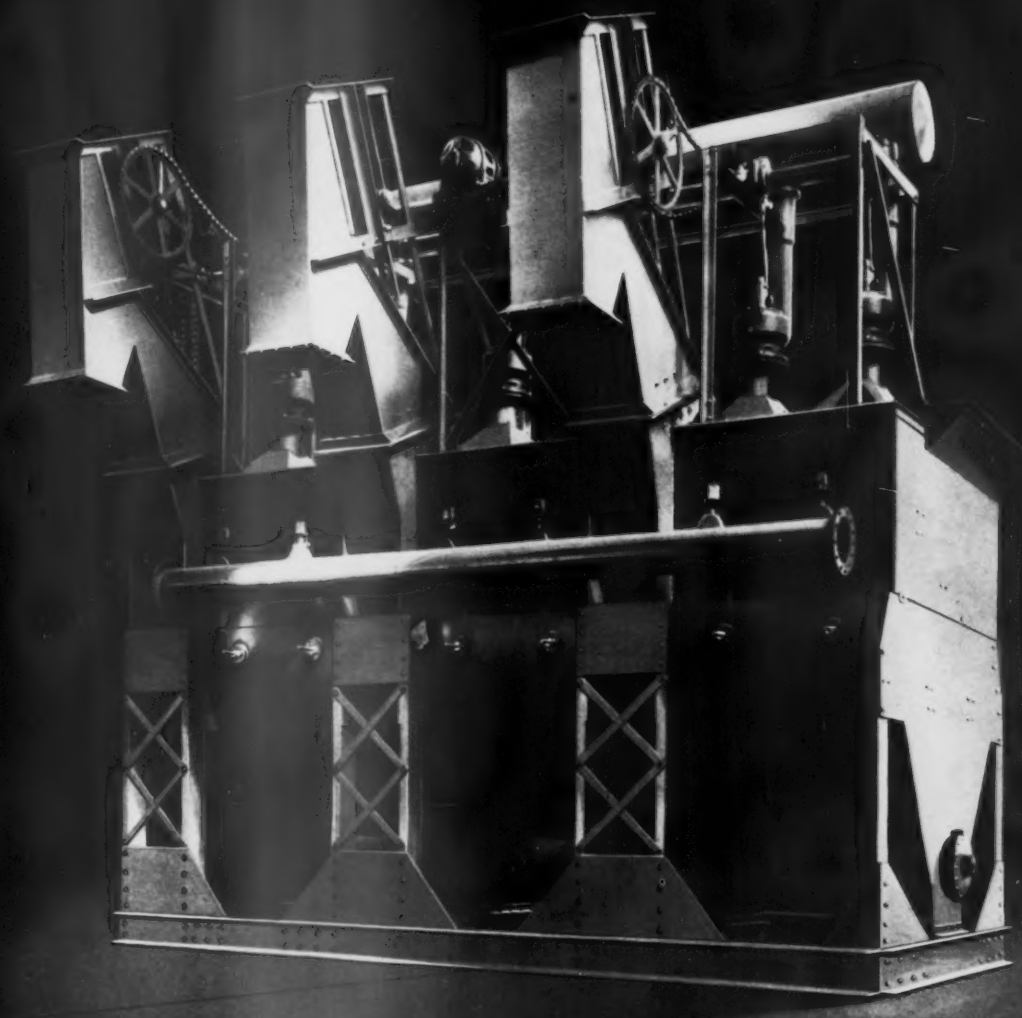
For further information on any of the above subjects, please get in touch with the nearest Allis-Chalmers sales office or write for special Coal Plant Catalog 153.

ALLIS-CHALMERS

— Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin, U.S.A. —

Jeff[illegible] Automatic Baum Jig[illegible] capacity up to 250 tons per hour. Details in Bulletin No. 563-A.

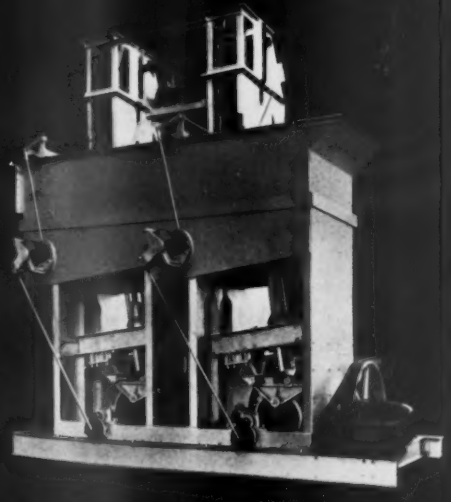
(Patents Pending)



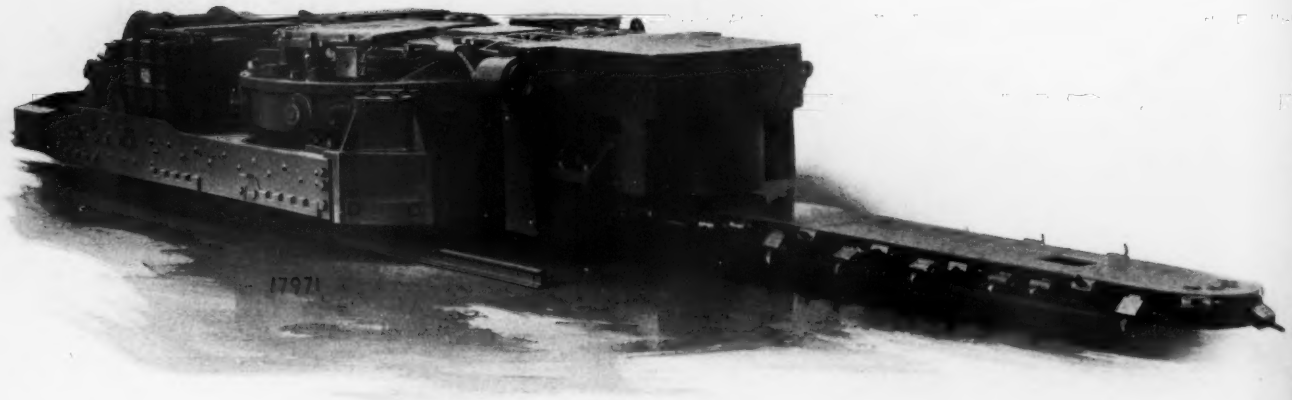
Jeffrey Automatic Diaphragm Jig (below) . . capacity up to 150 tons per hour. Details in Bulletin No. 591-A.

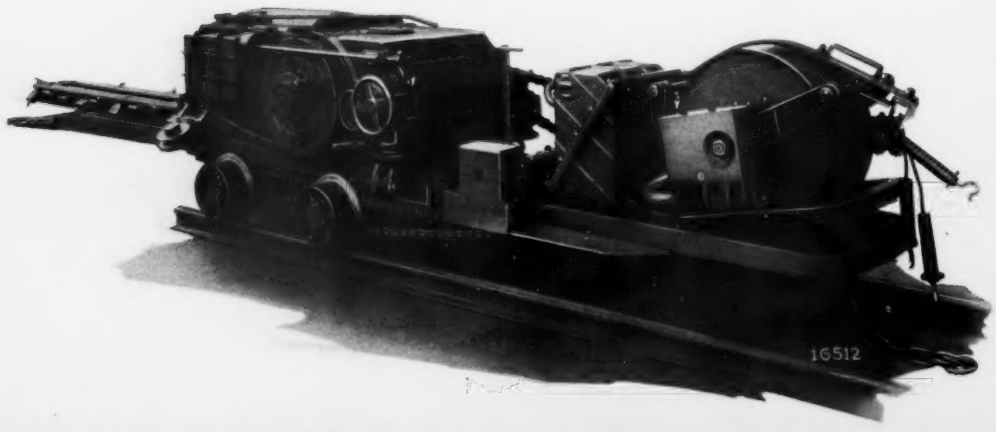
(Patents Pending)

JEFFREY AUTOMATIC JIGS



- CLOSE GRAVITY SEPARATION . . . American coals demand it . . only Jeffrey Jigs can give it . . for they alone are fully adjustable . . as well as automatic . . . they alone provide differential pulsation . . adjustable to the exact requirement of each cleaning job . . the differential stroke speeds separation . . hence gives SUPER capacity as measured by throughput per square foot of screen area . . . refuse withdrawal is continuous and automatically variable . . . these jigs insure an efficiency unattained by any other jig . . without sacrifice of separation and recovery results . . . they guarantee lowest investment cost per ton of capacity . . and highest operating economy.





Jeffrey 35-BB Shortwall Coal Cutter mounted on Self-propelling "Handitruck". (Patented). Catalog No. 575.

- Of course Jeffrey gives you the best in cutting machines . . . and why not? . . . founded in 1877 . . as the world's first manufacturer of cutters . . the company has developed many of the basic principles found in all cutters today . . . sixty years of Jeffrey experience holds mighty significance . . in terms of your needs . . . in shortwall, longwall or track-mounted cutters . . Jeffrey assures you complete satisfaction . . . our long leadership is your guarantee . . a leadership we protect and promote in every change of design and manufacture.

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Loading out coal with Jeffrey 61-HG Face Conveyor and Jeffrey 61-AM Room Conveyor. (Patented and Patents Pending). Catalog No. 580.

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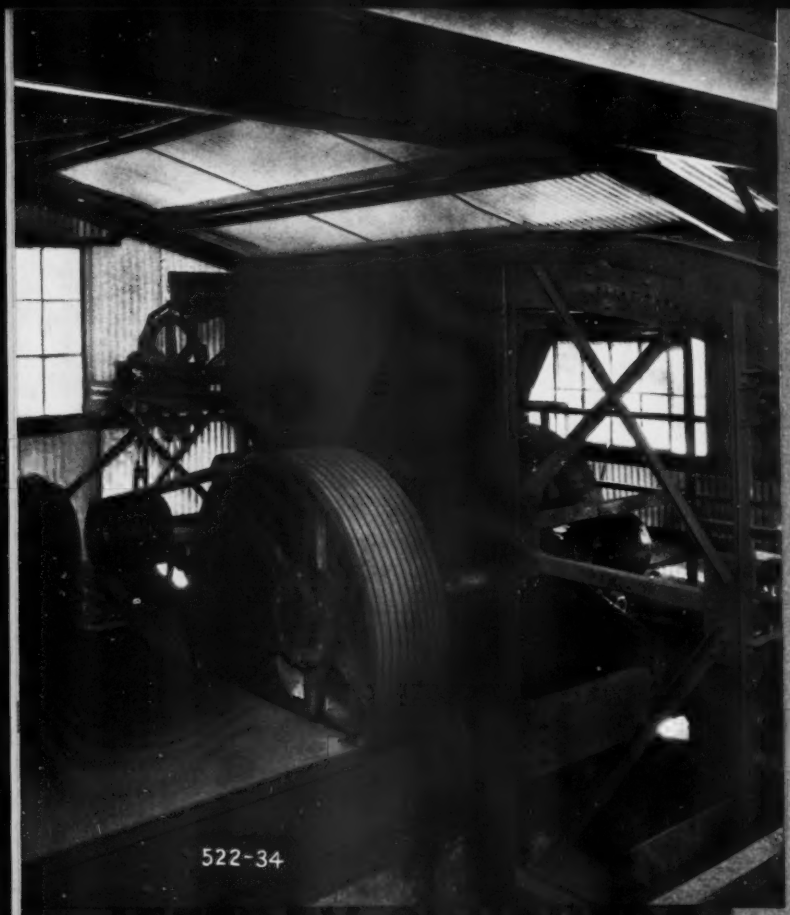

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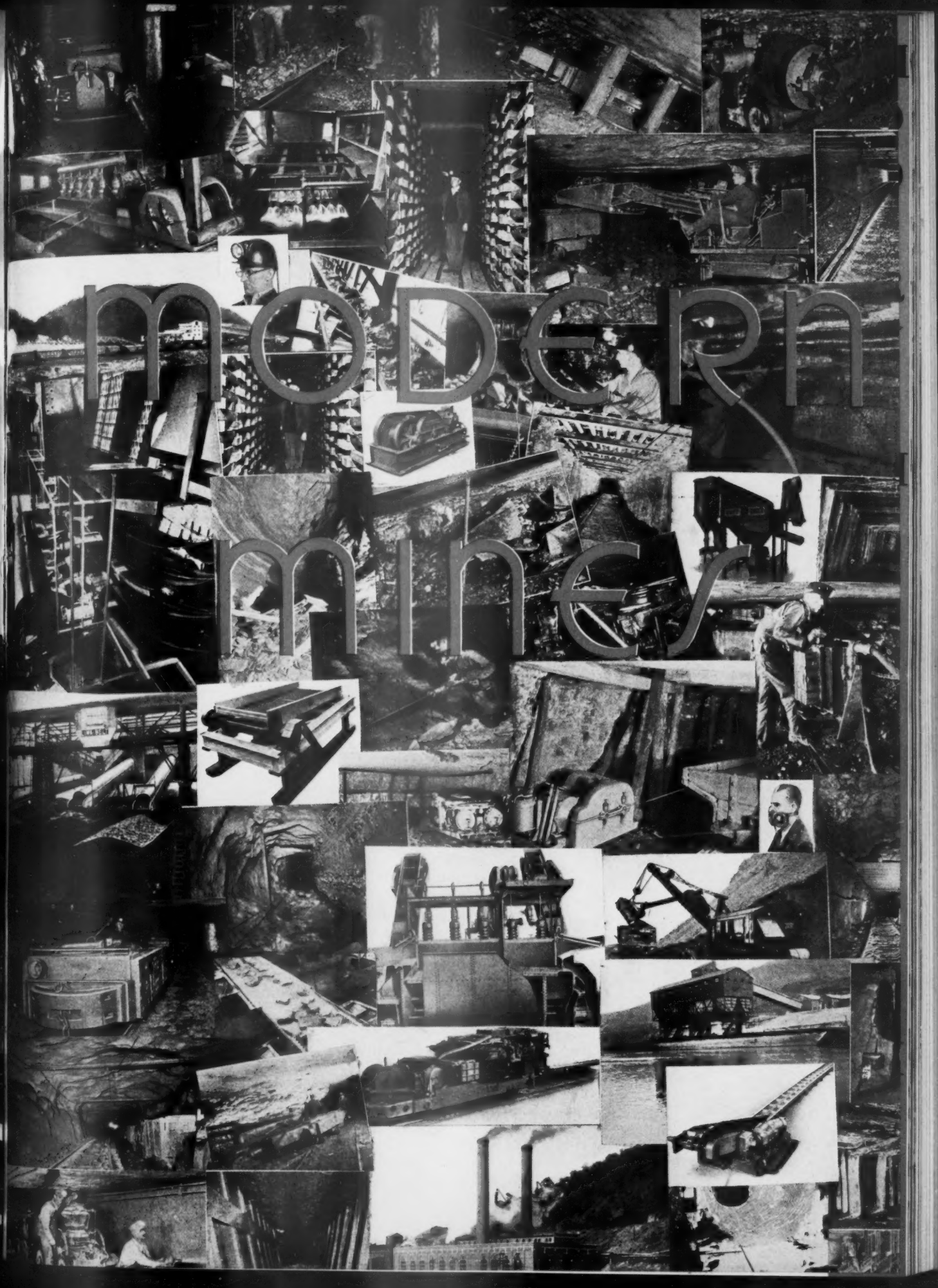
  Watch a Stroboscope slow down speedy vibrations to a walk!

  See alternating current waves pictured at a standstill on an oscillograph!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AMERICAN MINING CONGRESS

1935

(Coal Division)

MODERN MINE EQUIPMENT

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of the

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Perfected
end crimp
with special
water-proofing

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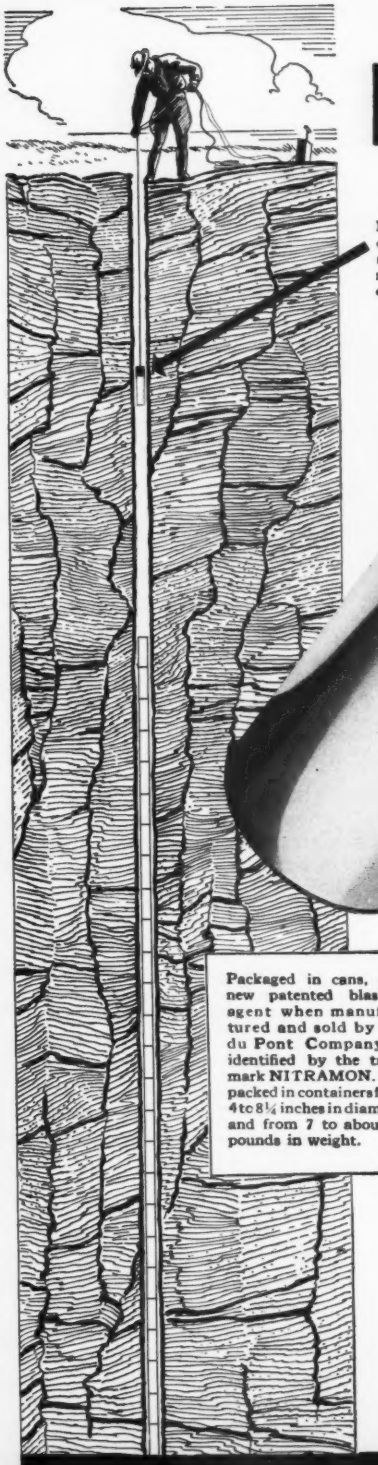
NITRAMON

TRADE MARK



NITRAMON can only be detonated when dynamite or T. N. T. cartridge is used.

is safer!

WHEN subjected to the usual tests applied to explosives, NITRAMON cannot be detonated *by the strongest commercial blasting cap—by Cordeau—by flame—by friction—or by impact.* NITRAMON develops exceptional blasting strength when detonated by a cartridge of either dynamite or T.N.T. This cartridge is placed on the top of a column load of Nitramon in a well drill hole.

Until the priming cartridge is in place, there is no danger while loading NITRAMON. In case of a misfire due to any outside causes, the primer can be removed and the NITRAMON becomes safe to be unloaded by any of several methods.

In addition to its *safe* features, NITRAMON has other important advantages:

1. SAVES MONEY—Its design is so efficient that satisfactory results are obtained at substantial savings.

2. SEALED AGAINST WATER—Packed in water-tight metallic containers.

3. WILL NOT FREEZE.

4. PRODUCES NO HEADACHES—Contains no nitroglycerin.

5. LOADS QUICKER—Because of its convenient package.

A bulletin containing complete information on grades available and methods of use will be sent on request.

Packaged in cans, this new patented blasting agent when manufactured and sold by the du Pont Company is identified by the trade mark NITRAMON. It is packed in containers from 4 to 8¼ inches in diameter and from 7 to about 65 pounds in weight.

E. I. DU PONT DE NEMOURS & CO., INC.
Explosives Department, Wilmington, Delaware

BRANCH OFFICES—Birmingham, Ala.; Boston, Mass.; Chicago, Ill.; Denver, Colo.; Duluth, Minn.; Huntington, W. Va.; Joplin, Mo.; Juneau, Alaska; Kansas City, Mo.; New York, N.Y.; Pittsburgh, Pa.; Portland, Ore.; Pottsville, Pa.; St. Louis, Mo.; San Francisco, Calif.; Scranton, Pa.; Seattle, Wash.; Spokane, Wash.; Springfield, Ill.; Wilkes-Barre, Pa.

DU PONT

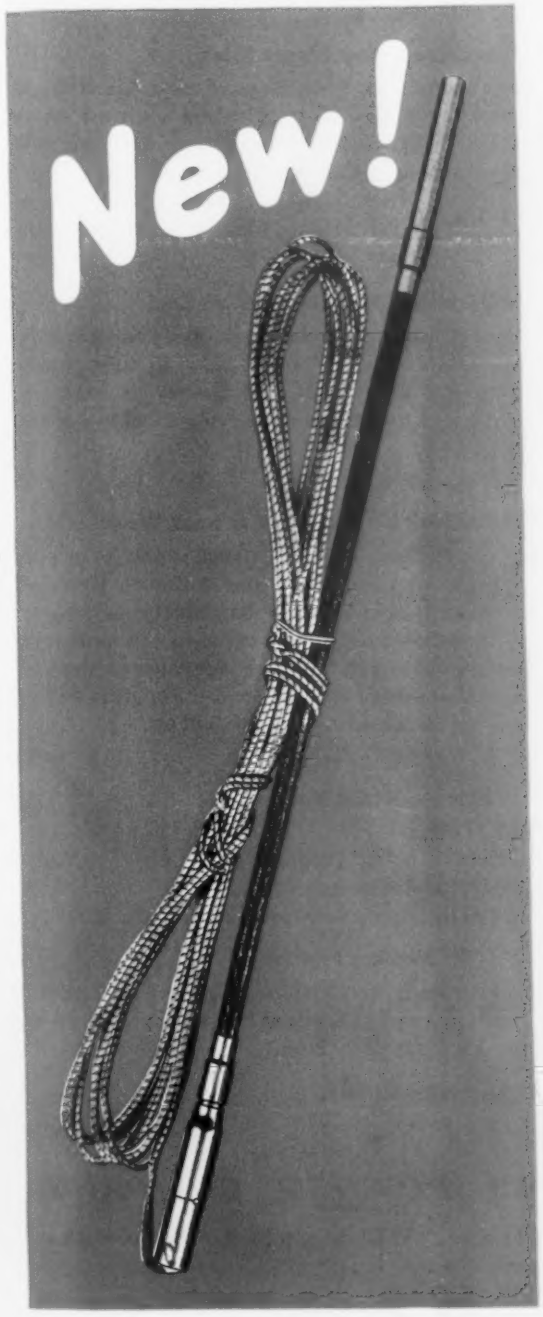
REG. U.S. PAT. OFF.

NITRAMON

TRADE MARK

THE IMPROVED BLASTING MATERIAL

Now~Western Delay Electric Igniters!



DELAY ELECTRIC IGNITERS have been added to the Western line of blasting caps! They embody important improvements—the result of months of careful experimental work, study and tests.

Fuse Specially Waterproofed! New Method of Attaching the Fuse!

The specially waterproofed fuse insures proper functioning, even under most adverse conditions. And a new and better method of attaching the fuse to the cap and ignition device has been developed. It provides an absolutely water-tight, permanent joint. Prevents missed shots which are otherwise caused by moisture seeping in.

A metal sleeve is slipped over the fuse and cap at one end. Over the fuse and ignition device at the other end. The sleeves are then cemented into place with a special waterproof cement. Western Delay Electric Igniters are reliable, more convenient to use and compact. Not bulky, like rubber tubing. Cannot slip out of place, even when inserting the igniter into the explosive.

The ignition device is the same as used in Western all-metal Delay Electric Blasting Caps. Will not short circuit through the metal parts. Insures positive fuse ignition. Cools and baffles the gases before allowing them to discharge.

Supplied with caps attached—or without caps—in all standard wire lengths. Strengths, No. 6 and No. 8. . . . Let us send you complete details.

WESTERN CARTRIDGE COMPANY
Dept. E-51, East Alton, Illinois

Western

FUSE CAPS • ELECTRIC BLASTING CAPS • PROTECTO-SPOOL ELECTRIC BLASTING CAPS • DELAY ELECTRIC BLASTING CAPS • DELAY ELECTRIC IGNITERS

HERCULES PLANNED BLASTING

a way to cut blasting costs

OFFERS ADVANTAGES IN CORRECT SELECTION AND USE OF EXPLOSIVES

for

COAL MINING

Hercules Planned Blasting cuts costs and improves results.

Through it you secure:

1. Explosives exactly suited to your work.

2. Organized methods that enable you to use them to the best advantage.

Hercules Planned Blasting is the modern blasting method for coal mining. Regardless of type of coal, height of seam, type of mining, size of coal desired, or method of loading, Hercules Planned Blasting can aid many operators by cutting blasting costs, speeding up production, and obtaining better performance.

If you wish to profit through Planned Blasting, tell the Hercules serviceman who calls on you. He will be glad to assist you in securing full details.

IT WILL PAY YOU TO STOP AT THE HERCULES EXHIBIT

COAL MINING EXPLOSIVES MADE AVAILABLE BY HERCULES PLANNED BLASTING

•

Lump-producing Permissibles

These permissibles represent a wide range of cartridge strength and count. The lower count Red H permissibles are used where higher cartridge strength is necessary, while the Hercoals will usually be found of value in coal that is more easily broken.

Red H C, L. F.	276*	Hercoal C-1	400*
Red H D, L. F.	316*	Hercoal D	450*
Red H F, L. F.	356*	Hercoal F-1	500*

Permissibles for Rock Work or Fine Coal

Two Hercules permissibles were especially designed for this type of work; namely, Red H B, L. F. and Collier C, L. F. In tight places, the higher cartridge strength of Red H B, L.F. may be desirable, while in easier shooting it is sometimes more economical to use the higher count Collier C, L. F.

Red H B, L. F.	280*	Collier C, L. F.	320*

Gelatin Permissibles for Wet Work or Rock Work

Hercogel A offers the highest water resistance available in permissible explosives. For most water conditions, however, Hercogel 2, a semi-gelatin permissible, should prove satisfactory, and where it can be used it will be found much more economical. In some rock work a gelatin or semi-gelatin permissible is desirable because of high cartridge strength and rate of detonation. Gelatin permissibles are not as economical to use as ammonia permissibles.

Hercogel A	206*	Hercogel 2	240*

Hercules Pellet Powder

"A"—strong and fast (212*).
"B"—weaker and slower than "A" (212*).
"C"—low density, fastest and strongest (226*).
"D"—the new lump producer with less fumes and smoke (250*).

"B" Blasting Powder

Granulations (coarse to fine): Standard 1 or 3C, Standard 2 or 2C, Standard 3 or C, Standard 4 or F, Standard 5 or 2F, Standard 6 or 3F, Standard 7 or 4F. Packing: 25 lb. kegs.

*Number of 1¼ in. by 8 in. cartridges per 100 lb.

•

B-12

HERCULES POWDER COMPANY
INCORPORATED
934 King Street, Wilmington, Delaware

BOOTHS 411-413

TRANSPORTATION

Gathering
Main Haulage
Shaft Hoisting
Slope Hoisting

GENERAL CHAIRMAN

G. S. Jenkins, Consolidated Coal Co. of St. Louis.

SUB-COMMITTEE CHAIRMEN

Gathering—Wm. P. Young, Crescent Mining Co.

Main Haulage—L. C. Skeen, Fordson Coal Co.

Shaft Hoisting—C. C. Ballard, New River Coal Co.

Slope Hoisting—I. N. Bayless, Union Pacific Coal Co.

COMMITTEE MEMBERS

Walter Buss, Standard Coal Co.

G. C. Dorris, Roundup Coal Mining Co.

H. L. Griffin, Federal Coal & Coke Co.

Geo. T. Stevens, Clinchfield Coal Corpn.

D. Jamieson, Jr., Lincoln Coal Co.

J. H. Richards, Hanna Coal Co.

G. G. Kanable, Rochester & Pittsburgh Coal Co.

H. J. Kinsman, Franklin County Coal Co.

Martin Lide, Consulting Engineer.

Henry T. Thrasher, Clarksburg.

A. C. Watts, Utah Fuel Co.

O. S. Batten, Civil and Mining Engineer.

Garner Williams, Cabin Creek Consolidated Coal Co.

Roy Williams, National Fuel Co.

H. N. Clendening, Hutchinson Coal Co.

E. D. Wood, Louisville Gas & Electric Co.

G. R. Armstrong, Sloss-Sheffield Steel & Iron Co.

H. C. Hieronymus, Peabody Coal Co.

R. M. Woodson, W. G. Duncan Coal Co.

E. N. Denham, Mining Engineer.

H. G. Hornickel, Anchor Coal Co.

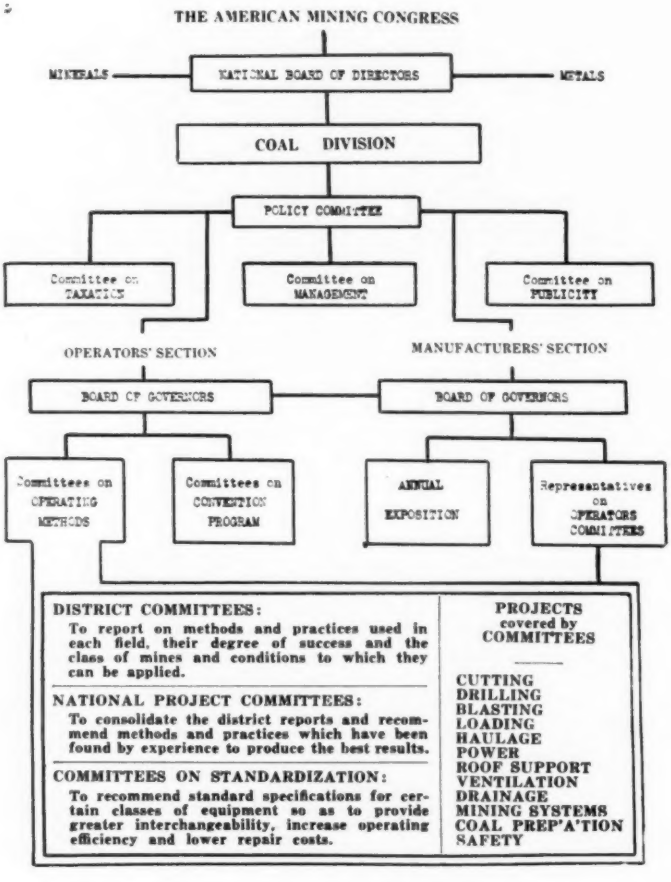
AMERICAN MINING CONGRESS

1935

(Coal Division)

MODERN MINE EQUIPMENT

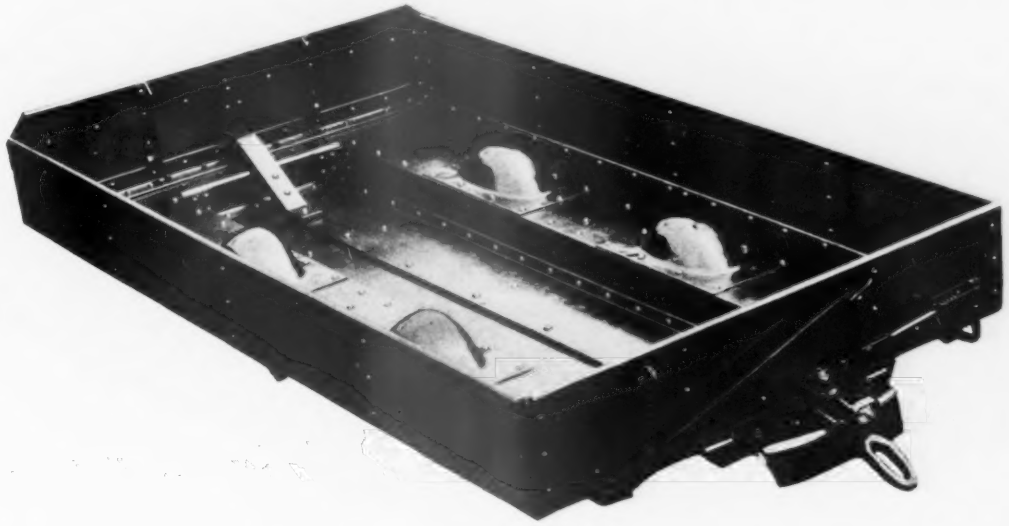
Organization Chart of the Coal Division


THE AMERICAN MINING CONGRESS
MINERALS
NATIONAL BOARD OF DIRECTORS
METALS
COAL DIVISION
POLICY COMMITTEE
Committee on TAXATION
Committee on MANAGEMENT
Committee on PUBLICITY
OPERATORS' SECTION
MANUFACTURERS' SECTION
BOARD OF GOVERNORS
BOARD OF GOVERNORS
Committees on OPERATING METHODS
Committees on CONVENTION PROGRAM
ANNUAL EXPOSITION
Representatives on OPERATORS COMMITTEES
DISTRICT COMMITTEES:
To report on methods and practices used in each field, their degree of success and the class of mines and conditions to which they can be applied.
NATIONAL PROJECT COMMITTEES:
To consolidate the district reports and recommend methods and practices which have been found by experience to produce the best results.
COMMITTEES ON STANDARDIZATION:
To recommend standard specifications for certain classes of equipment so as to provide greater interchangeability, increase operating efficiency and lower repair costs.
PROJECTS covered by COMMITTEES
CUTTING
DRILLING
BLASTING
LOADING
HAULAGE
POWER
ROOF SUPPORT
VENTILATION
DRAINAGE
MINING SYSTEMS
COAL PREP'A'TION
SAFETY

The H. E. Harman Coal Corp.

selects

ENTERPRISE



Large Capacity Mine Cars

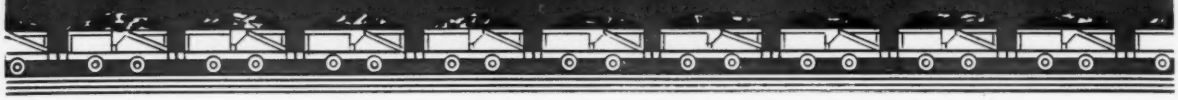
ENTERPRISE 4-Axle Low Type Large Capacity Mine Cars are helping Superintendent Davidson make a record at this new mine. Only 90 days in operation yet producing 1,400 tons of coal daily. This mine, with its efficient operating layout, is destined to be one of the model mines of the new Buchanan County Coal Field.

The Harman car will be on exhibition at the Cincinnati Show, Booths 624 and 626. You are cordially invited to inspect it.

ENTERPRISE WHEEL & CAR CORP.

Bristol, Va.—Tenn. **Huntington, W. Va.**

CAN YOU MATCH THIS MINE CAR BEARING RECORD?



Over a million and a half Timken Bearings have been placed in service in mine cars during the last fifteen years. The total number of these bearings that have had to be replaced from all causes during this entire period is less than one fourth of one per cent! When your mine cars go on Timken Bearings you know you are going to get dependable, trouble-free service—and at the lowest possible cost per ton hauled. The service given by Timken Bearings in mine cars is unparalleled in the history of anti-friction bearing application throughout all industry.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *TAPERED ROLLER* **BEARINGS**

COAL MINE LUBRICATION

Quality Lubrication for The Coal Industry

Lubricating Devices for The Coal Industry

—"This one thing we do well"

HULBURT OIL & GREASE COMPANY

SPECIALISTS IN COAL MINE LUBRICATION

PHILADELPHIA, PA.

MINING SYSTEMS

Room and Pillar
Longface

GENERAL CHAIRMAN

F. G. Smith, Sunday Creek Coal Co.

SUB-COMMITTEE CHAIRMEN

Room and Pillar—T. H. Claggett, Pocahontas Coal & Coke Co.

Longface—G. A. Knox, Gunn-Quealy Coal Co.

COMMITTEE MEMBERS

J. Q. Angel, Mahan Ellison Coal Corp.

T. F. Christian, West Kentucky Coal Co.

A. E. Roberts, Mildred Supply Co.

R. E. Salvati, Pond Creek Pocahontas Co.

W. O. White, W. J. Rainey, Inc.

P. C. Graney, C. C. B. Smokeless Coal Co.

E. A. Siemon, Hillman Coal & Coke Co.

W. J. Simonton, Mary Helen Coal Corp.

Herbert Tomlinson, Rocky Mountain Fuel Co.

R. S. Villadsen, Montevallo Coal Mining Co.

D. J. Carrol, Mt. Olive and Staunton Coal Co.

F. B. Dunbar, Mather Collieries.

Harry N. Moses, U. S. Coal & Coke Co.

Geo. B. Baker, Tierney Mining Co.

R. C. Thomas, North East Coal Co.

G. L. Chamberlin, Southern Coal & Coke Co.

P. L. Donie, Little Betty Mining Corp.

AMERICAN MINING CONGRESS

1935

(Coal Division)

POWER

Generation
Substations
Distribution

GENERAL CHAIRMAN

Peter F. Loftus, Consulting Engineer.

SUB-COMMITTEE CHAIRMEN

Generation—C. W. Gibbs, Harwick Coal & Coke Co.

Substations—Carl Lee, Peabody Coal Co.

Distribution—M. W. Horgan, West Penn Public Service Co.

COMMITTEE MEMBERS

W. J. Donahue, Republic Steel Corp.

E. D. Fortney, Hutchinson Coal Co.

C. B. Locke, Boone County Coal Co.

W. C. Shunk, Consulting Engineer.

W. E. Wolfe, Clinchfield Coal Corp.

F. E. Gleason, U. S. Fuel Co.

J. M. Connor, Windsor Power House Coal Co.

Geo. M. Humble, Stearns Coal & Lumber Co.

F. A. Mash, Brookside-Pratt Mining Co.

F. B. Thomas, Victor American Fuel Co.

W. H. Cooke, West Virginia Coal & Coke Corp.

L. P. Crecelius, The North American Coal Corp.

A. F. Finnerman, Elk Horn Coal Corp.

M. W. Gilliam, West Va. Engineering Co.

D. W. Jones, Valier Coal Co.

C. E. Cowan, Jamison Coal & Coke Co.

C. B. DeVenny, Emperor Coal Co.

D. W. Greene, Perry Coal Co.

Bernard G. Sampson, Continental Coal Co.

James Hyslop, Walter Bledsoe & Co.

AMERICAN MINING CONGRESS

1935

(Coal Division)

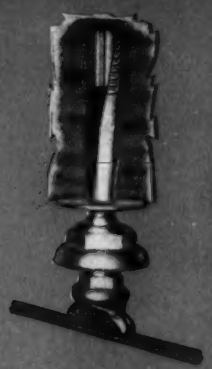
MODERN MINE EQUIPMENT

FOLLOW

O-B
WELCOMES
YOU
to it's Exhibit.
Spaces 412-513

TYPE KSD AUTOMATIC
D. C. MOTOR STARTER

A SAFETY SWITCH FOR
HEAVY FEEDER CIRCUITS



A FAMOUS OVERHEAD ASSEMBLY

the O-B BEACON -

. . . for GREATER MINING PROFITS

Not for years has there been so much hearty and genuine enthusiasm for an American Mining Congress coal show as there is for the one to be held the week of May 13. Both operators and manufacturers, alive to the rapidly changing status of economic affairs, have arranged for programs and exhibitions which are certain to be invaluable in planning for future progress and profits.

Conscious of the need for equipment which contributes its full share to low cost haulage, the Ohio Brass Company has been busily engaged since the last convention in developing, refining, and improving its lines of overhead trolley materials, rail bonds, safety and control equipment, headlights, and current collectors. As you enter the exhibition hall, look for the O-B beacon. It will direct you to the display of this modern equipment designed especially to meet modern production problems, to lower the cost per ton and to increase the margin of profit.

OHIO BRASS COMPANY

Mansfield, Ohio, U.S.A

Canadian Ohio Brass Co., Limited Niagara Falls, Ontario, Canada

New York • Philadelphia • Boston • Pittsburgh • Chicago • Cleveland
Atlanta • Dallas • Los Angeles • San Francisco • Seattle

1759M

FUSED TROLLEY TAPS SAVE MOTORS AND TRAILING CABLE

NEW TROLLEY WIRE LUBRICATOR

THERE ARE MORE TRIPS IN THIS HEAVY DUTY SHOE AND HARP

NEWS!

FOUR YEAR PROGRAM OF RESEARCH SOLVES THE PROBLEM OF BRUSH UNIFORMITY ON HEAVY DUTY SERVICE

THE NEW "SA" SERIES . . . FOR HEAVY DUTY D. C. POWER SERVICE!

FUNDAMENTAL brush properties essential to satisfactory performance on heavy duty service have been more accurately determined.

New combinations of materials possessing these properties have been developed.

Exact methods of production insuring control of uniformity have been devised and established.

The result is the New "SA" Series of brushes designed for a wide range of applications on all types of stationary motors and generators used on heavy duty direct current power service.

The New "SA" Series consists of five carefully determined grade varieties known as SA-25, SA-30, SA-35, SA-40 and SA-45, all definitely graded with respect to commutating properties.

The exceptional uniformity of the grades in the "SA" Series has been fully established by field service tests. This uniformity applies to performance as well as to the mechanical and electrical characteristics of the brushes themselves.

Further information on the advantages and economies of these new grades in your particular service will be supplied upon request.

In addition to the regular trade marks — the Three Pyramids, the Silver Strand Cable and the Grade Number — these new grades are further identified by the **Double Engraved Lines** (Trade Mark Registered) down the center of one side of the brush.

NATIONAL CARBON COMPANY, INC., Carbon Sales Div., Cleveland, Ohio

Unit of Union Carbide UCC and Carbon Corporation

BRANCH SALES OFFICES: NEW YORK PITTSBURGH CHICAGO SAN FRANCISCO

NRA CODE

LOADING

Mechanical Conveyors

GENERAL CHAIRMAN

G. F. Campbell, Old Ben Coal Corp.

SUB-COMMITTEE CHAIRMEN

Mechanical—R. J. Oldham, Centralia Coal Co.

Conveyors—T. F. McCarthy, Clearfield Bituminous Coal Corp.

COMMITTEE MEMBERS

L. H. Schnerr, Consolidation Coal Co.

Chas. P. Brinton, Barnes & Tucker Co.

Geo. A. Schultz, Liberty Fuel Co.

H. A. Treadwell, C. W. F. Coal Co.

W. P. Vance, Butler Consolidated Coal Co.

Thos. Donelson, Hardy-Burlingham Mining Co.

Albert Evans, C. C. B. Smokeless Coal Co.

G. J. Krebs, Reading Iron Co.

Gomer Reese, Kemmerer Coal Co.

Davis Read, West Kentucky Coal Co.

T. F. Whalen, Pittsburgh & Erie Coal Co.

C. R. Stahl, Elkhorn Piney Coal Mining Co.

Earl Griffith, Pruden Coal Co.

F. S. Follansbee, Koppers Coal & Transportation Co.

Arthur Downing, Monitor Coal & Coke Co.

S. M. Cassidy, Saxton Coal Mining Co.

H. J. Nelms, Ohio & Penna. Coal Co.

AMERICAN MINING CONGRESS

1935

(Coal Division)

MODERN MINE EQUIPMENT

The Purpose of a Convention

THERE are conventions and conventions. Serious, frivilous, political, . . . but the annual convention sponsored by the COAL DIVISION, The American Mining Congress, is a

"BUSINESS" CONVENTION

Many years ago, before these conventions became realities, the Coal industry individually and collectively believed that cooperation in production problems was merely furnishing ammunition to-the-enemy; and that any way efficient operating practice was the other fellow's lookout.

With the advent of these conventions, this conviction has changed radically. As evidenced by one of the slogans for the 1935 conventions . . .

"PROFIT BY THE EXPERIENCE OF OTHERS."

It has been satisfactorily demonstrated that cooperation on operating problems means thousands of dollars saved each year through the elimination of "experimental" work.

Today the coal industry is an outstanding example of Cooperative Results insofar as its production problems are concerned. These conventions offer the maximum of up-to-the-minute data on efficient methods of producing coal; they are the Open Forum of discussion; they have pulled the four corners of the coal industry together to the advancement of the industry.

The Annual May Meeting of the Coal Division is a

CONVENTION WITH A PURPOSE.

ANNOUNCING The JOY JUNIOR

26" HIGH

COMPARISON OF DIFFERENT TYPES OF JOY LOADERS

	JOY JR	8 BU	7 BU	5 BU	10 BU
Rated capacity — tons per min	½	1½	2	2	4
Maximum " " " "	1	2½	3½	3½	6½
Total weight of loader	7000	9500	14500	15600	19000
" height " "	26"	35"	40"	53"	54"
" width " "	4'4"	4'6"	6'0"	6'0"	7'0"
" length " "	17'9"	20'5"	23'9"	24'6"	25'0"
Speeds caterp. low ft/min	20	55	37	37	54
" " high "	60	170	114	114	178
" front conv "	127	167	175	191	212
" rear "	—	—	—	258	223
" gather arms stroke/min	26	42	37	38	36
Max. reach of gather. arms	4'10"	5'4"	6'8"	6'8"	7'4"
Number of motors used	4	1	1	1	1
Motor rating	2½ ea. =10 hp	20 hp	35 hp	35 hp	50 hp
Crank pin "digging force" lbs	3300	4200	5750	5750	7900

LOOK IT OVER AT CINCINNATI BOOTH Nos. 226-230-327-331-333

Joy announces the Joy Junior, especially developed for low cost operation in seams as low as 32 inches. Joy now provides a loader for every condition—a loader most economically fitted to each mining operation from the standpoint of number of crew to potential tonnage output per machine shift.

The accompanying table illustrates the wide range of Joy built loaders. Consult Joy on your loading problems.

The JOY Manufacturing Company

FRANKLIN · · · · · · · · · · PENNSYLVANIA

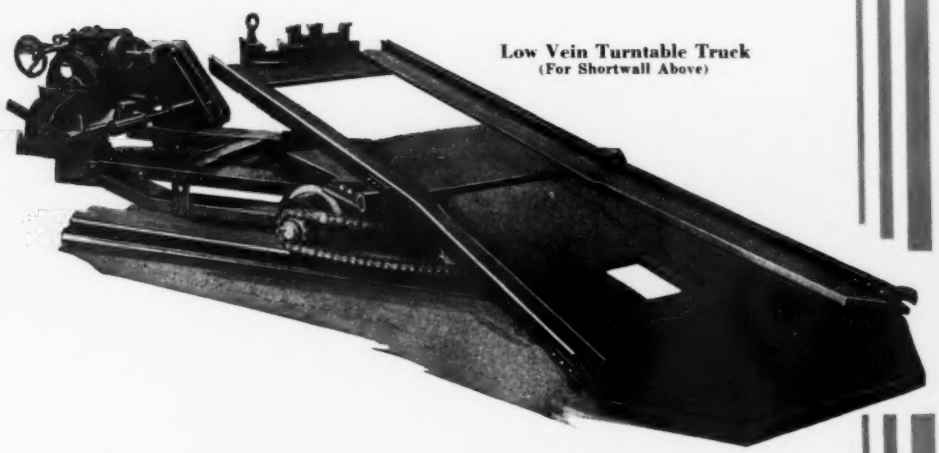
Goodman Latest are t

The Newest of Shortwalls

Universal Control
Low Vein Shortwall
Type 412

Cuts in either Direction
Variable Cutting Speed
Easy to Control
Accessible
Semi-Magnetic Control
Universal Rope Movement
Special Tilting Arrangement

See Us at the Show



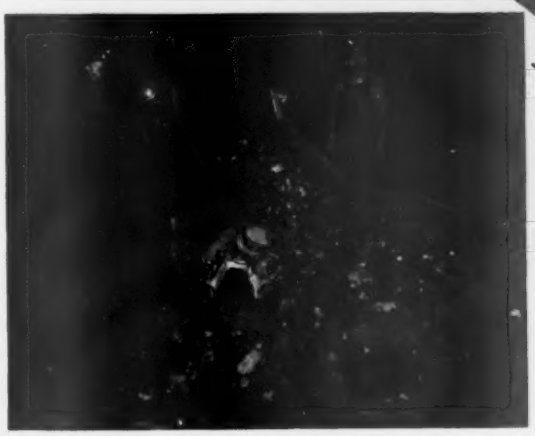
Low Vein Turntable Truck
(For Shortwall Above)

Be Sure *to see the new* **Reversible**
Shaker Conveyor Drive in Operation - - - a surprise in store!

the Hit of the Show

The Last Word in Loaders

Attacks at Various Heights
Fast Tramming
Adjustable
Easy to Control
Operates on Grades



Mounted Track Loader
Type 260-A

Easy to Repair
Powerful
Rugged
Fast Loading

GOODMAN

MANUFACTURING COMPANY
HALSTED ST. at 48TH.
CHICAGO - - - ILL.

Locomotives - Loaders - Coal Cutters

PITTSBURGH-WILKES-BARRE-HUNTINGTON-BIRMINGHAM-ST LOUIS-DENVER-LOS ANGELES

And The Exposition . . .

THE EXPOSITION held annually in conjunction with the Convention of practical coal operating men, under the auspices of the Coal Division, The American Mining Congress, is in reality a

"MACHINERY AND SUPPLY MART"

Thousands of dollars' worth of equipment are annually displayed; more than a hundred equipment houses participate; the latest inventions; the most modern ideas; the newest equipment are on exhibit. Thousands of coal operators view that exhibit . . . many delay their purchases until after this display takes place. . . .

The Exposition is sponsored by **FORTY-SEVEN** nationally known manufacturers, who have been responsible for its phenomenal success. For it has been successful in spite of depressions. It has never, once, lowered its banner, but each year the slogan is "bigger and better."

A TWO HUNDRED MILLION DOLLAR MARKET . . .

Supplied by **Progressive** manufacturers, fully alive, and equally prepared, to meet its requirements.

SURFACE PREPARATION

Cleaning
Screening
Dedusting

GENERAL CHAIRMAN

T. W. Guy, Consulting Engineer.

SUB-COMMITTEE CHAIRMEN

Screening—C. W. Connor, Nellis Coal Corp.

Cleaning—C. P. Proctor, Pittsburgh Coal Co.

Dedusting—J. R. Fenton, J. K. Dering Coal Mining Co.

COMMITTEE MEMBERS

F. A. Jordon, Youngstown Sheet & Tube Co.
W. J. Schenler, Colorado Fuel & Iron Co.
Carl Scholz, Consulting Engineer.
Douglas Terpstra, Consulting Engineer.
A. M. Chamnes, Bluebird Coal Co.
J. C. Johnston, Elkhorn Piney Coal Mng. Co.
H. D. Smith, Majestic Collieries Co.
C. Y. Thomas, Pittsburgh & Midway Mining Co.
R. L. Wilhelm, New Jellico Coal Co.
R. L. Coffey, Bird Coal Co.
Thos. Garwood, C. W. & F. Coal Co.
G. L. Smith, Rochester & Pittsburgh Coal Co.
C. P. Anderson, White Oak Coal Co.
C. L. Bransford, Republic Steel Co.
A. F. Castolini, Houston Collieries Co.
H. W. Seyler, Carnegie Steel Co.
D. H. Devonald, Peabody Coal Co.
A. C. Dittrick, Hanna Coal Co.
H. Faust, United Pocahontas Coal Co.
Roy P. Hudson, Dickinson Fuel Co.
A. P. McIntosh, Galloway Coal Co.
H. F. Hebley, Allen & Garcia Co.
O. A. Higgins, Humphreys Coal & Coke Co.
A. F. Nesbit, Consulting Engineer.
Henry F. Warden, American Coal Co.
H. G. Conrad, Knox Consolidated Coal Co.

AMERICAN MINING CONGRESS

1935

(Coal Division)

MODERN MINE EQUIPMENT

Performance . . .

THERE has never been a record of success without a record of performance back of it. For twelve consecutive years The American Mining Congress has sponsored the "Annual Convention of Practical Coal Operating Officials" and each year has seen them grow stronger and better. As direct evidence we point to the "Attendance Record" for these conventions for the following years:

	Registration	Coal Companies	Exhibitors
1926	1,523	323	93
1927	1,246	402	118
1928	1,620	352	98
1929	2,062	414	113
1930	2,830	365	127
1931	2,435	435	124
1932	1,460	243	74
1933	3,480	451	78
1934	2,287	431	87

PERFORMANCE . . . COOPERATION . . . SERVICE

NEW PREPARATION STANDARDS *for* ILLINOIS COAL

"A NEW mine — a new coal — new methods of preparation with a new standard of uniformity and quality." This statement taken from Delta Coal Mining Company's current advertising, tells the story of the success of their new preparation plant — a complete Link-Belt tipple and Link-Belt Simon-Carves washery. It has a total rated capacity of 400 tons per hour, producing 7 sizes. The washery cleans all sizes from 3″ to 0. Coal is from the Illinois No. 6 Seam.

Largest "American Baum" Type Wash Box

An average of over 250 tons per hour is being handled through the single Link-Belt Simon-Carves wash box.

Over 50,000,000 tons is the annual combined rated capacity of the Link-Belt Simon-Carves washing units which have been sold for world-wide service. These many installations cleaning all varieties and characteristics of coal, have fully demonstrated the efficiency and economy of this system. It automatically cleans coal thoroughly and completely with a minimum loss of yield, regardless of the refuse content, or characteristics of the coal.

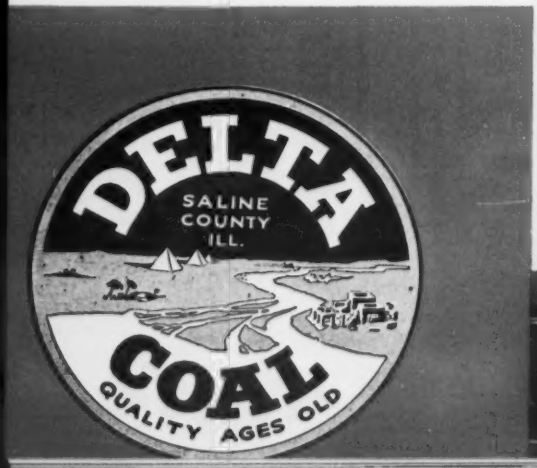
Send for the new Link-Belt book, "Coal Preparation."

LINK-BELT COMPANY, 300 W. Pershing Road, CHICAGO 5256-A

Philadelphia Denver Seattle Pittsburgh Wilkes-Barre St. Louis Huntington, W. Va. Kansas City, Mo. Toronto

LINK-BELT COAL PREPARATION EQUIPMENT

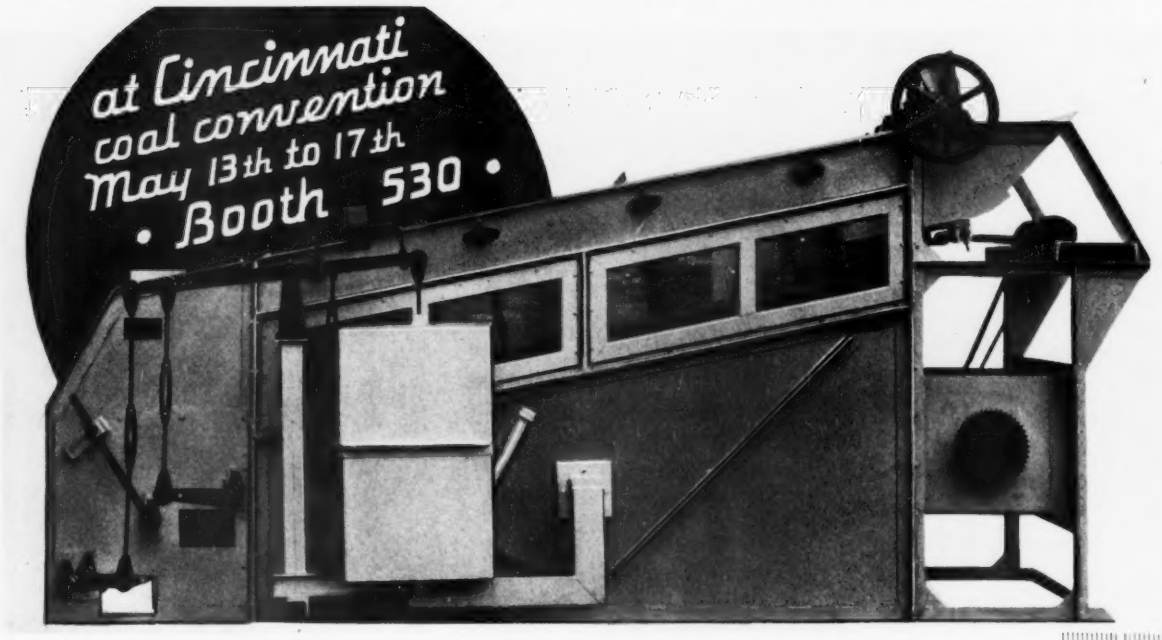
See Our Exhibit at AMERICAN MINING CONGRESS EXPOSITION, Cincinnati, Week of May 13th



— see the New-Improved

STUMP AIR-FLOW

combined Coal Cleaner and Deduster



IT "CLICKED" from the start. . . . Then, for three years, it demonstrated its effectiveness under all conditions of service. . . . This is the record of the Stump Air-Flow Coal Cleaner and Deduster.

Now, THESE improved features have been added:

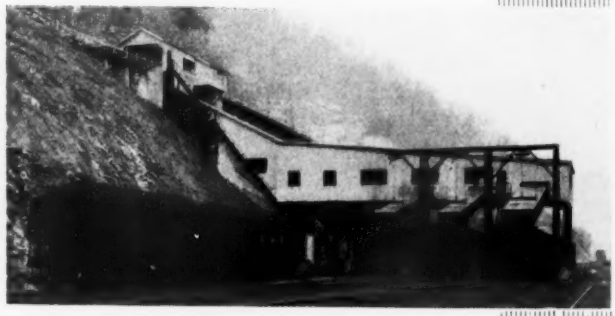
—a reciprocating feeder that insures steady operation
—an enlarged cleaning area
—a still more simplified design
—side windows which make the cleaning process visible at all times

This Stump machine is only one of many units developed by Roberts and Schaefer for economical coal preparation. Whether you operate the wet or dry process we invite your inquiry. Our engineers are eager to help solve your problem.

Send for bulletins covering the phases of coal preparation which particularly interest you—no obligation of course.

For many years Roberts and Schaefer Co. have engineered and built complete coal handling and preparation plants.

The photograph below shows a Marcus Screen Tipple just completed for H. E. Harman Coal Corporation at Harman, Virginia —capacity 400 tons per hour.



Be sure to visit our Booth 530—American Mining Congress, Cincinnati, Ohio

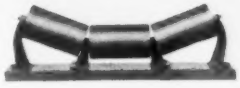
ROBERTS and SCHAEFER CO.

ENGINEERS AND CONTRACTORS—WRIGLEY BUILDING, CHICAGO

3885 Beachwood Blvd. PITTSBURGH, PA.
514 Ninth Avenue HUNTINGTON, W. VA.
P. O. Box 55 DENVER, COLO.

LESS ASH . . . MORE BUSINESS

EQUIPMENT ITEMS



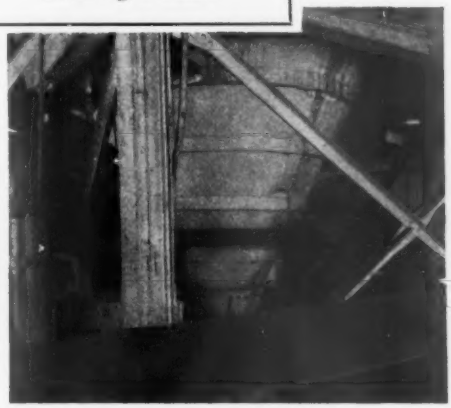
Conveyor Idlers
Crushers
Mine Conveyors
Feeders
Screens
Loading Booms

The buyer is taking an unprecedented interest in cleanness and uniformity . . . testing of samples is becoming the order of the day . . . the producer offering the best prepared coal is getting the business.

The Chance Sand Flotation Process For Cleaning Bituminous Coal

is therefore of great interest to every operator. It is the one *exact* method of preparing coal to meet the most rigid requirements and to command a better price because of cleanness. The Chance Method is economical too. Robins will gladly send an engineer to explain what advantages you can expect from the process and quote both price of installation and cost of operation.

Visit our Booth 328 at the American Mining Congress Exposition in Cincinnati
MAY 13 to 17



MATERIAL HANDLING
ROBINS
EQUIPMENT

The booklet, "Chance Sand Flotation Process for Cleaning Bituminous Coal" is yours for the asking. Send for a copy.

ROBINS CONVEYING BELT CO.
15 Park Row, New York City.

I would be pleased to have as checked: Representative Call ☐. The booklet, "The Chance Sand Flotation Process" ☐. Bulletins on Equipment Items ☐.

Name .....
Firm .....
Address .....
Town ..... State .....

The Year Book . . .

AS a permanent record for the **CONVENTION** Proceedings, and the **EXPOSITION**, the Year Book, published by the Coal Division of The American Mining Congress, is entirely unique. It is a product entirely apart. There is but **ONE** Year Book . . . and it has no equal . . . no competitor.

It presents once each year the essence of Modern Mining Practice. It carries the Operating Reports of the Coal Division, composed of the careful studies of competent men, over a period of a year; it carries a full record of the papers presented to the Annual Convention, which appear in no other publication; it presents the most modern and up to date equipment, with records of its performance.

It offers to the busy mining man the most concise, the most informative information on "Modern Trends in Coal Production Methods."

THE YEAR BOOK

Published by THE COAL DIVISION

THE AMERICAN MINING CONGRESS.

MINE MAINTENANCE

Roof Support
Ventilation
Drainage

GENERAL CHAIRMAN

F. F. Jorgensen, Consolidation Coal Co.

SUB-COMMITTEE CHAIRMEN

Roof Support—Reamy Joyce, Wood Preserving Corp.

Ventilation—J. F. MacWilliams, Penna. Coal & Coke Corp.

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Mark Davis, Valley Camp Coal Co.

T. W. English, Consolidation Coal Co.

W. H. Gates, Buckeye Coal Co.

J. E. Howard, New River Co.

H. A. Marshall, Wolf Den. Div., Shallmar Mining Corp.

James S. Miller, Lehigh Navigation Coal Co.

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A. W. Hesse, The Buckeye Coal Co.

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F. C. Carrothers, Pond Creek Pocahontas Coal Co.

AMERICAN MINING CONGRESS

1935

(Coal Division)

MODERN MINE EQUIPMENT

Back Of It All . . .

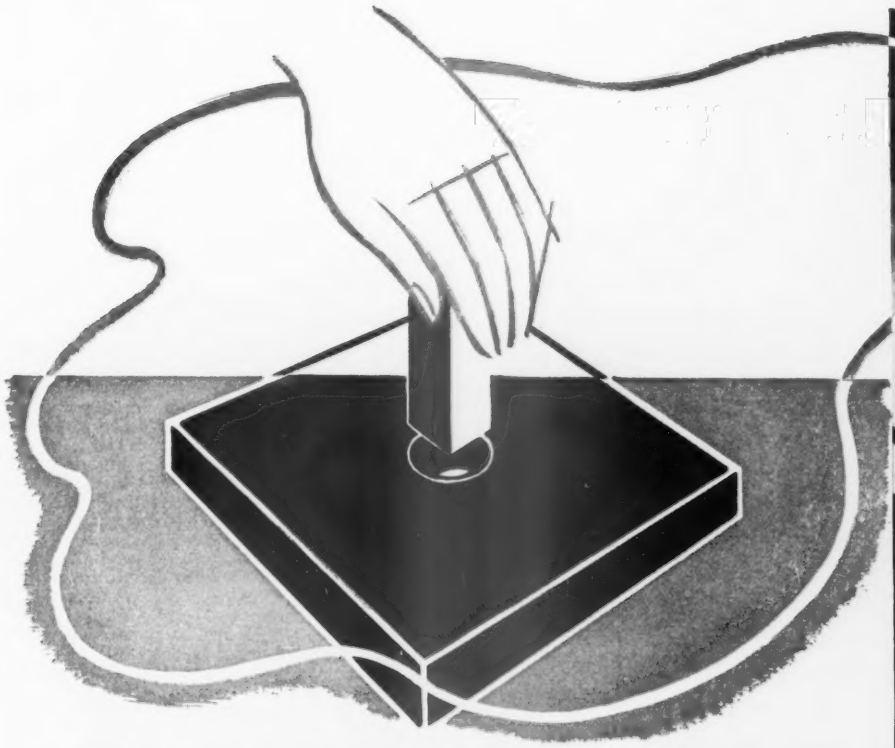
BACK of all of these things . . . The Coal Division; The Convention; The Exposition; The Year Book, stands

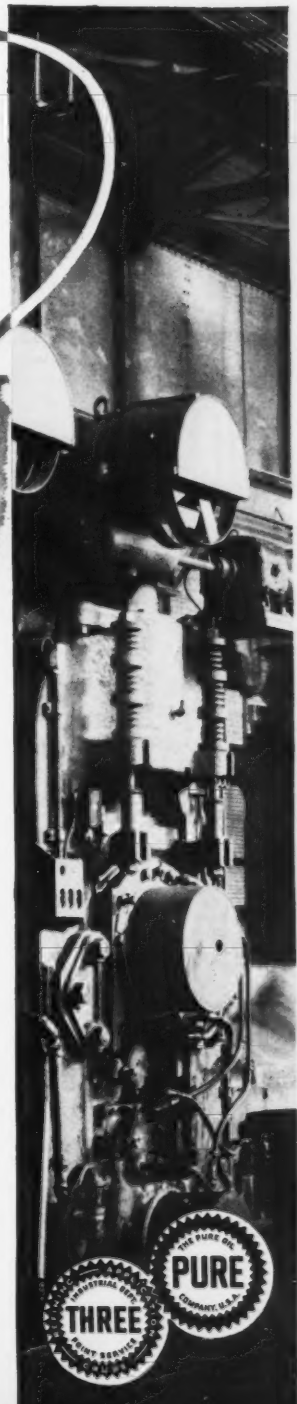
THE AMERICAN MINING CONGRESS

National organization of The Mining Industry, with a record of useful service over a thirty-five year period. An organization that stands for the highest service . . . an organization that has served the Coal Industry in no small measure.

To its work it brings the cooperative effort of all branches of the Mineral Industry. Coal is but one of its units; it speaks with a "common voice" upon all matters that affect minerals. Its work is designed to develop the industry to its highest state in service to the United States—in conservation of its products, and Safety for its workers.

It offers a friendly hand in the solving of the industry's problems. It has been termed the "Common-Denominator" of the Mining Industry, and it asks the cooperation, moral and financial, of every progressive mining man to the end that **MINING** may receive a **"SQUARE"** as well as a **"NEW"** Deal. . . .





"A SQUARE PEG WON'T FIT A ROUND HOLE"

—Neither will one industrial lubricant fit all conditions. PURE OIL'S THREE POINT SERVICE insures the proper lubricant being selected for each specific use. Maximum protection and economy at minimum cost.

1 Pure Oil Crude comes from many types of oil fields in nine states. Some types of Crude are better adapted to certain uses than are others. Pure Oil, having a wide selection of Crudes, can better serve you by specifying the lubricant refined from the correct type of Crude for your particular lubrication need.

2 Good refining is vital. All types of Crudes must be correctly refined to prevent loss of inherent lubricating values. Pure Oil's modern refining methods, especially adapted to each type of Crude, preserve and improve the lubricating qualities of Pure Oil superior Crudes.

3 Scientific application is equally important. Good Crudes properly refined go for naught unless skilled engineering selected the type of lubricant best adapted to your particular problems. Pure Oil Engineers are thoroughly familiar with lubrication, its requirements, and its problems.

Consult a Pure Oil industrial engineer for practical means of *decreasing* lubrication costs and *increasing* lubrication safety.....

If you are interested in wire ropes and their lubrication, we suggest you write for our Mechanical Bulletin No. 50.....

THE PURE OIL CO.

U. S. A.

PRODUCERS, REFINERS, MARKETERS OF A COMPLETE LINE OF PETROLEUM PRODUCTS

Booth 630
COAL SHOW

?
?.

We Could Not Believe our Ears

. . . when we first heard that sand pumps in coal mines averaged 25% to 35% efficiency; yet when our engineers investigated, this fact was confirmed everywhere. We were further astounded to learn of annual pumping power being treble, and annual maintenance being greater, than the initial pump cost; that, in some services, an impeller lasted only two weeks . . . These facts convinced us that every coal mine would welcome a sand pump which would:

(1) Develop Efficiencies of 60% or More.
(2) Reduce Maintenance and Outage.
(3) Maintain its Head and Capacity Without Change of Speed.

Hundreds of Hydroseal Pumps are producing these results in handling various abrasive materials; we believed equal performance could be obtained in coal mines. Practice proved that we were right; this unique principle of introducing clear water, as indicated by arrows in diagram, functions perfectly when pumping sand or other abrasive materials. *Power economies are sure, thus by paying us a part of this saving, you can install a Hydroseal Sand Pump, and experience its further economies in maintenance.* For description of pump and horse-power tables, get Bulletin 4-335.

HYDRO SEAL

Hydroseal and Maximix Designs are Covered by Patents and Applications in the Major Mining Centers of the World
The ALLEN-SHERMAN-HOFF Co., 111 South 15th Street, PHILADELPHIA, PA. • Offices in Principal Cities

PRESERVE *the* THOROUGHBRED STRAIN *of your equipment with* Westinghouse *Renewal Parts and Service*

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● To provide the best possible service for its customers, Westinghouse maintains the Homewood Works at Pittsburgh, Pa., the world's largest plant devoted solely to the manufacture of Renewal Parts. Westinghouse Renewal Parts are built to the same specifications as those used in new equipment and, therefore, guarantee a continued high standard of performance.

Prompt Delivery

● Thirty-four Westinghouse Warehouses place a complete stock of standard apparatus and renewal parts within quick and easy access of all customers.

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● A chain of 37 well-equipped Westinghouse Service Locations are maintained at strategic centers from coast-to-coast and are available to render you prompt service. They are well equipped and manned by experienced personnel to repair electrical and mechanical equipment such as motors, generators, transformers, electric magnets, turbines, condensers, stokers, pumps, etc.

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Westinghouse

Quality workmanship guarantees every Westinghouse product

The Mining Congress Journal

Presents Each Month

1. An Editorial policy that reflects the best thought of the Mineral Industry upon matters of importance to the Industry and the Nation.

2. Feature articles upon Economic phases of the Industry.

3. The Wheels of Government—being a review of the happenings in Government Bureaus and Congress.

4. Sixteen to twenty-four pages devoted to a discussion of practical operating problems, presented by men from the Industry.

5. And regular departments.

   —News of the Field.
   —News of the Manufacturers.
   —Of All Things.
   —Personal Items.

A Mining Magazine for mining men—Sponsored by the Leading Mining Organization in the United States

THE VOICE OF THE INDUSTRY

SAFETY

Safe Practices
First Aid and Rescue

GENERAL CHAIRMAN

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First Aid and Rescue—C. F. Keck, Jamison Coal & Coke Co.

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J. B. Benson, Federal Coal & Coke Co.

J. J. Cavanaugh, The Valley Camp Coal Co.

T. H. Harrison, Cambria Fuel Co.

W. F. Hazen, The Wheeling Township Coal Mining Co.

Carl Nyman, National Coal Co.

B. H. Schull, Binkley Mining Co.

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F. T. Fitzharris, Carnegie Coal Corp.

L. S. Taylor, Elk River Coal & Lumber Co.

Albert Gately, Republic Coal Co.

S. B. Hardy, Darb Fork Coal Co.

A. S. Wilson, Boone County Coal Corp.

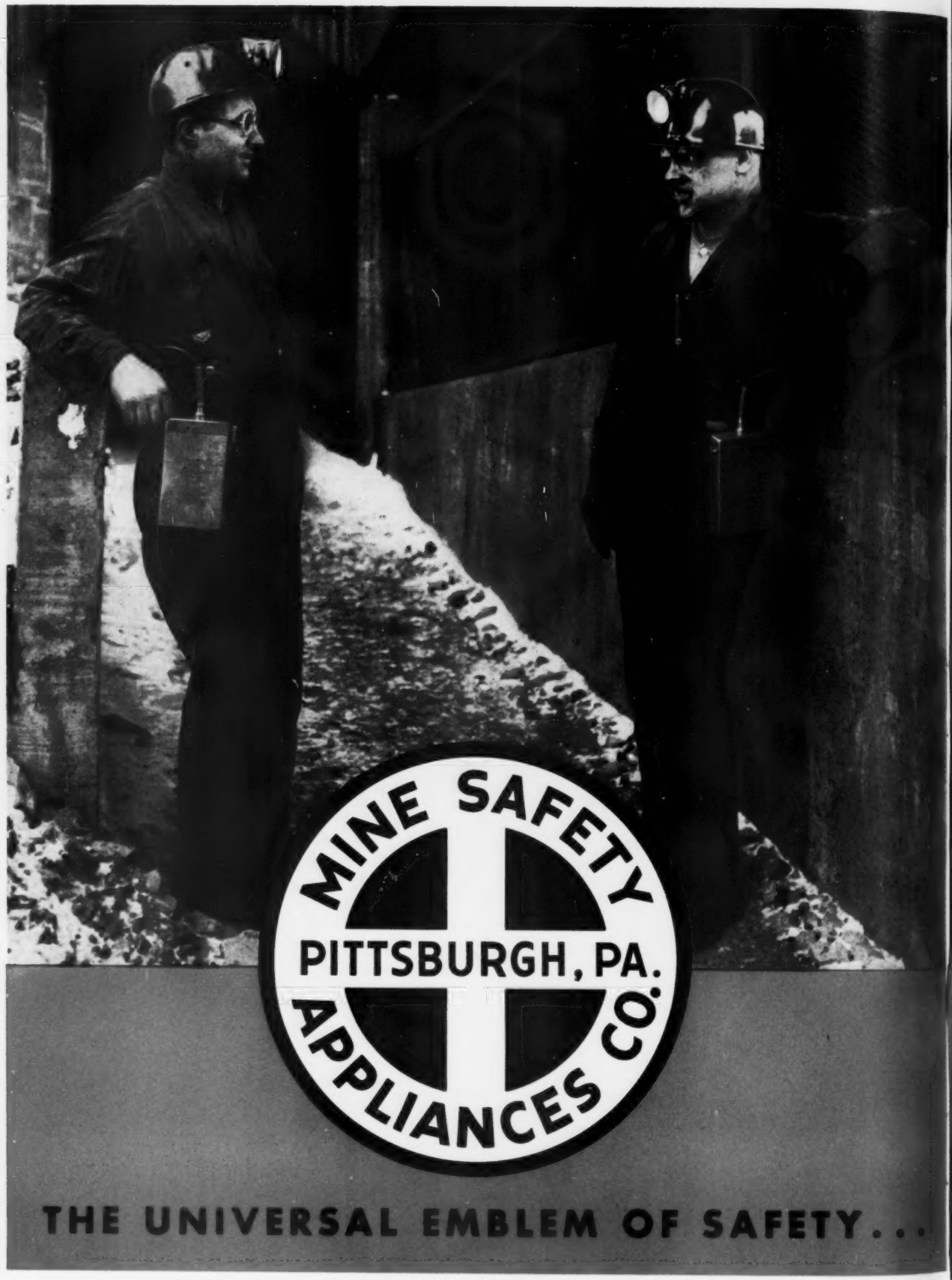
William Palmer, Wisconsin Steel Co.

AMERICAN MINING CONGRESS

1935

(Coal Division)

MODERN MINE EQUIPMENT


MINE SAFETY
PITTSBURGH, PA.
APPLIANCES CO.
THE UNIVERSAL EMBLEM OF SAFETY...

M·S·A SAFETY EQUIPMENT

Indispensable to safer, more efficient mining

Preventable accidents, NEEDLESS ACCIDENTS,—call them what you will,—cost the mining industry millions of dollars annually. Collectively, that is. Individually, there's a different story to tell. Hundreds of well-managed operations,—by establishing efficient safety organizations, and installing more effective protective equipment,—have reduced their injury rates and accident costs to a point far below the general average for the industry.

Obviously, these progressive operations have increased their profits by the same amount they reduced their costs. They have obtained humanitarian benefits, and economic betterment as well. YET NONE OF THEM HAVE REACHED A POINT OF SAFETY AND EFFICIENCY THAT OTHER OPERATIONS CANNOT MATCH. THE WAY IS OPEN TO ALL.

M.S.A. Safety Equipment is NOT a panacea for all the mining ills that produce accidents. Better mining practice and machinery both have a place on your safety program,—but we have yet to hear of the case where M.S.A. Safety Equipment failed to pay for itself many times over in reduced compensation costs and lost-time charges.

We will be glad to cite actual cases and figures in proof of that statement, and to work with you in formulating plans to better your mining conditions, increase the safety and welfare of your men, and reduce your accident costs.

MINE SAFETY APPLIANCES CO.

Braddock, Thomas and Meade Streets
Pittsburgh, Pa.

M.S.A. Products include Breathing Apparatus . . . Inhalators . . . Masks of all Types . . . Gas Indicators . . . Gas Detectors . . . M.S.A. Safety Goggles . . . M.S.A. Protective Hats and Caps . . . Edison Electric Cap Lamps . . . Safety Clothing . . . First Aid Equipment . . . Submarine Escape Apparatus. Descriptive Bulletins will be sent on request.

M·S·A

will occupy Booth No. 400 at the Coal Convention

We cordially invite you to visit our exhibit, bring your friends along and stay as long as you like. We'll have a complete line of Safety Equipment on display, capable men to demonstrate it for you, and plenty of printed material you can take along and go over at leisure.

LOOK FOR IT AT THE COAL CONVENTION

FACTS AND FIGURES

AO Goggles Lower Costs Per Ton

MANY mine operators have demonstrated beyond question that AO goggles are like good production tools: they pay their own way and earn an attractive profit. They make it *pay* to be humane.

A large eastern operator saved $30,000 a year by following a safety program in which goggles played a leading part; another mine whose underground workers now wear goggles continuously reduced eye injuries 95% in 2 years, and on still another property where 30% of the workers wore goggles, eye accidents were cut 75%. Goggles on *your* workers' eyes will reduce your cost per ton.

American Optical Company, represented in the coal mining industry by Mine Safety Appliances Company, offers a wide selection of goggles for every mine eye hazard . . . a service that helps you obtain the type of goggles best suited to the needs of each man . . . and every cooperation in making your safety program more effective and profitable.

MINE SAFETY APPLIANCES CO. PITTSBURGH PA

AO spectacle type goggles provide *effective* protection for breaker employees and underground workers. As comfortable as ordinary spectacles. Earpieces and bridges are sturdy—yet adjustable for easy fitting. Super-Armorplate lenses provide maximum protection from impact.

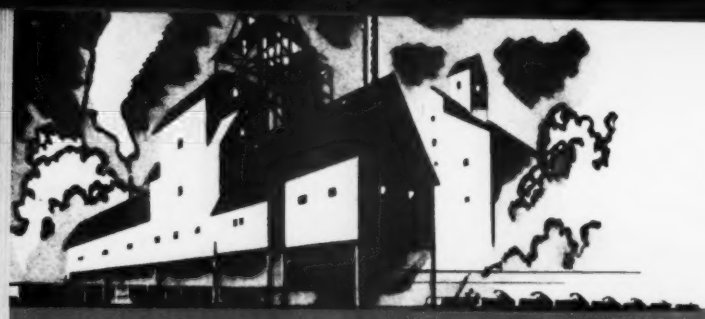
American Optical Company

REPRESENTED IN THE MINING INDUSTRY BY MINE SAFETY APPLIANCES COMPANY

American Mining Congress EXPOSITION

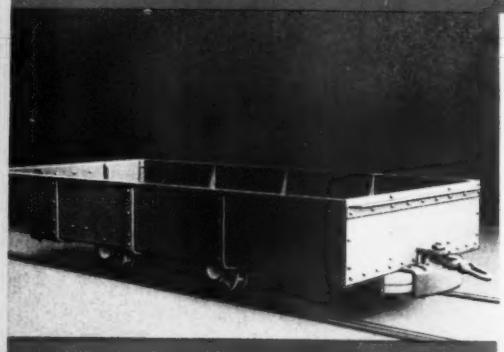
Make it a point to visit the joint exhibit of the United States Steel Corporation Subsidiary Manufacturing Companies. It is hoped that visitors will be impressed by more than the display of evidence of broad service to the mining industry —that they will carry away the thought that there is a human, friendly side to this business of manufacturing and selling.

United States Steel Corporation Subsidiaries

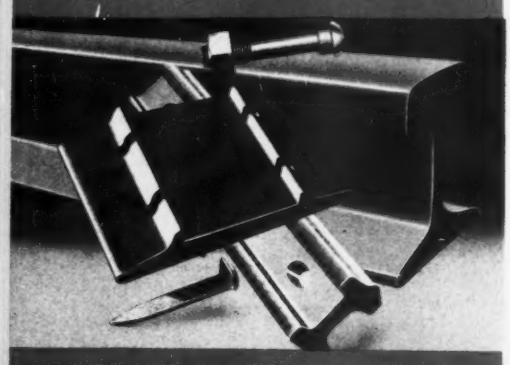


With higher labor costs and shorter hours the productive capacity of men and machines is becoming increasingly important in the mining industry. Greater efficiency, through the use of modern equipment, offers the solution.

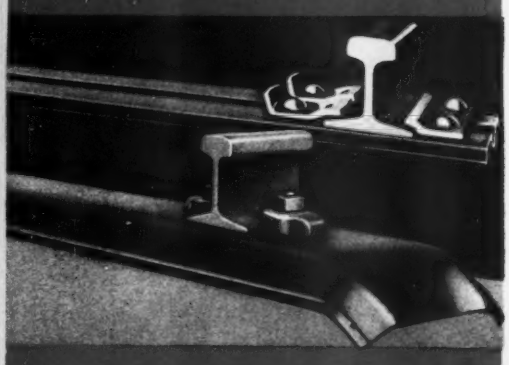
MODERN PRODUCTS



STEEL MINE CARS



TRACK MATERIALS



STEEL MINE TIES

TRACK EQUIPMENT

Steel mine ties, standard and light rails, Tiger-Weld rail bonds, angle bars, tie plates, track spikes, track bolts, special trackwork—frogs, crossings, switches, ground throws.

CUTTING, LOADING and HAULAGE

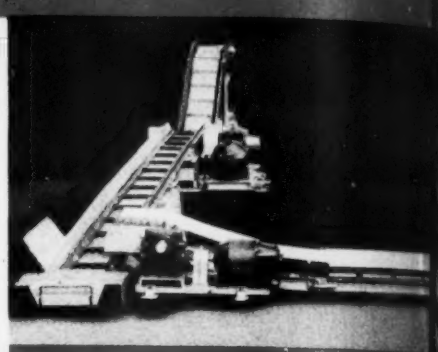
Steel and composite mine cars, mine car and locomotive wheels and axles, sectional conveyors, Tiger Brand special wire rope for mine hoist, shovel and mining machine feed, tail and coal loader. Amerclad All-Rubber cables for mine locomotives and mining machinery, aerial tramway systems, rolled steel shapes for the welded construction of mining equipment, welding wire, U S S High-Tensile Steels for lighter-weight construction of mine cars, special alloy steels.

ROOF SUPPORT

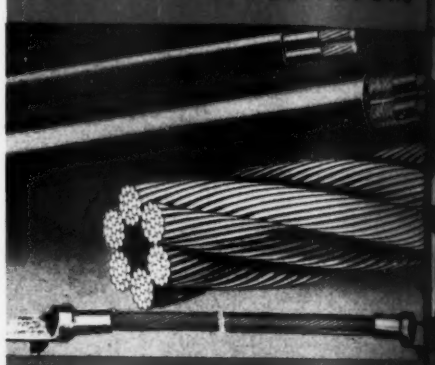
Steel mine timber, Lorain collapsible mine posts, structural steel, concrete reinforcement.

POWER and WATER

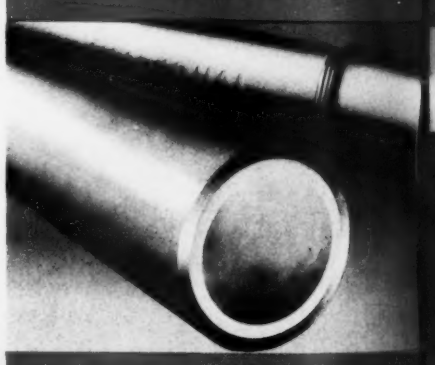
Electrical wire and cables, trolley wire, Tiger wire rope clips, Fiege Tiger-Claw wire rope fittings; National Duroline, Copper Steel, Scale-Free, and Coated pipe for water supply



SECTIONAL CONVEYORS



WIRE AND WIRE PRODUCTS

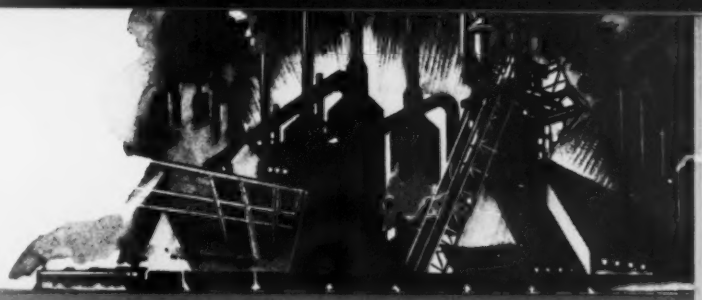


TUBULAR PRODUCTS

AMERICAN BRIDGE COMPANY . . . . . PITTSBURGH
AMERICAN SHEET AND TIN PLATE COMPANY . PITTSBURGH
AMERICAN STEEL & WIRE COMPANY . . . CHICAGO
CARNEGIE STEEL COMPANY . . . . . PITTSBURGH
TENNESSEE COAL, IRON & RAILROAD

United States Steel Corporation Subsidiaries

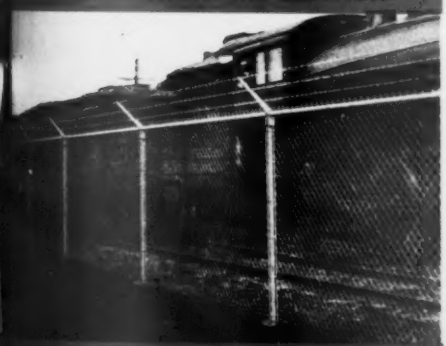
The summary of products shown below reflects the efforts of the Subsidiary Manufacturing Companies of the United States Steel Corporation to be of real and comprehensive service to the mining industry and its supply manufacturers.



for MODERN MINING

SHEET STEEL

MINE STRUCTURES
FABRICATION AND ERECTION



PROTECTIVE FENCING

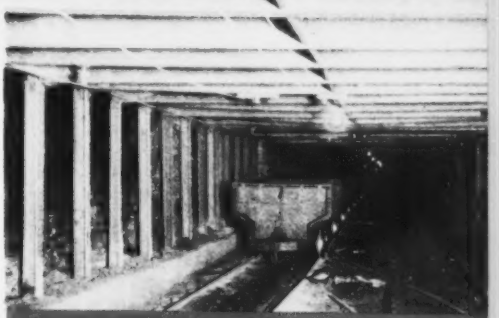
lines and drainage; boiler tubes; seamless pipe for power lines, etc.

BUILDINGS and PROPERTIES—SURFACE PREPARATION

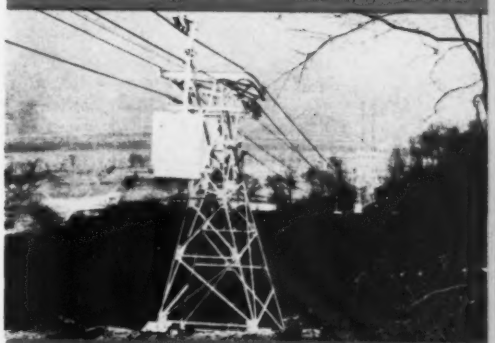
Structural steel for, and fabrication and erection of, head frames, shaft-framing, breakers, conveyor bridges, track trestles, coal-handling bridges and towers, transmission towers, tipples, docks, storage bins, mixer and crusher houses, washeries, barges, pumping stations, boiler and power houses, U S S Copper Steel Sheets, Apollo Keystone Copper Steel, Apollo Best Bloom Galvanized and American black sheets for roofing and siding—supplied flat, corrugated and formed. U S S Stainless Steel Sheets for coal screens, chutes and buckets, special abrasion-resisting steel, Multigrip floor plate, woven wire fencing, fence posts, ornamental lawn fence, Red-Tag screen cloth, hardware cloth, barbed wire, nails, concrete reinforcement.

STRIPPING

Tiger Brand wire rope for shovels and draglines, Amerclad All-Rubber cables for power shovels, abrasion-resisting steel for buckets and shovels.



STEEL MINE TIMBER



AERIAL TRAMWAYS

HIGH TENSILE STEELS

CYCLONE FENCE COMPANY . . . WAUKEGAN, ILL.
ILLINOIS STEEL COMPANY . . . . . CHICAGO
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United States Steel Corporation Subsidiaries

The Danger of Minority Control

MORE than 40,000,000 people in the United States earn their own living by work.

The leaders of less than 5,000,000 of that number, organized in national unions, largely control the legislation which applies to the 120,000,000 people making up our population.

The control and direction of these 5,000,000 organized workers is mainly in the hands of a few hundred who, once in office, are largely endowed with the power to reelect themselves and continue that domination. The most important legislation in the United States during recent years has been dominated by that self appointed oligarchy of labor leaders.

These statements may seem critical, but as a matter of fact, they carry to these leaders, the very highest compliment which it is possible to pay genius and ability.

The Congress of the United States is composed of 496 members, each supposedly elected because of his ability to represent his state or his congressional district wisely or more effectively than could the defeated candidate. Congress is supposed to represent all the people of the United States. When 1 or 2 percent of that population are able to dominate congressional acts, majority control, which is the essence of our Government, is entirely superseded by the control of a very small minority.

At the insistence of organized labor, we are adding to the wall of protection in behalf of these less than 5,000,000 workers as against the 40,000,000 workers who are not so protected.

It may be thought out of order to question the wisdom of Section 7a of the National Industrial Recovery Act. If so we plead guilty and express the belief that no greater industrial blunder was ever made by an intelligent nation.

By the enactment of this act the cost of living to 125,000,000 consumers has continually increased while their earning power has decreased.

It is a matter of supreme regret that organized labor has taken advantage of periods of greatest emergency to demand advantages which it could not secure in prosperous times.

The Adamson law was wrested from the administration at midnight as a necessary concession to prevent a nation-wide railroad strike which would have prostrated the business of the nation.

The Clayton Act was an emergency and not a deliberative measure.

The great emergency of the present depression made it possible to force section 7a into the Recovery Act. And when the time came for the agreement on codes of fair competition, organized labor demanded that section 7a should be inserted in any code thereafter agreed to or approved by the Government.

Section 7a was regarded as the entering wedge through which organized labor could enforce the domination of one great union upon the whole of American industry. Section 7a was not as effective as its authors anticipated it would be. And now organized labor is pressing its demands before Congress for additional legislation which will accomplish the purposes originally intended.

We give full endorsement and approval to organized labor and its right to bargain collectively but are equally firm in the belief that there should be no labor trust, nor should there be an employers trust.

We regard as gravely dangerous the necessities which are being created to require a nation-wide organization of employers of labor with power to stop all employment as organized labor seeks to be able to prevent all service.

The wages of labor must come from the earnings of labor. The combined cost of capital, management and labor must not exceed the amount which consumers can pay for the output. As prices rise consumption falls; foreign goods replace domestic production; and exports are decreased. The law of supply and demand is inexorable.

Organized labor may be able to control the supply of labor but it cannot control the demand for the goods, through the sale of which alone wages can be paid.

The great purpose of government is protection of the personal and property rights of its citizens. Its most important second purpose is to maintain conditions which will foster a proper distribution of wealth.

The great service rendered to the nation by organized labor is fully recognized and appreciated.

To the extent that it demands for the few what is impossible for the many, it does not render a public service. In fact, in the end it defeats its own purpose.

Capital is entitled to interest; management is entitled to its fair share of earnings in proportion to the service which it renders.

Labor is entitled to its full share of what the consumer can pay as he absorbs the goods which are the product of capital, management and labor.

We must first maintain our Government under the Constitution and controlled by the majority. The effort of any minority, whether it be of capital or of labor, to dictate the action of its legislators is not only subversive of our form of Government but is bound to react against the interest of those who exercise that control.

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Changing Ideas

NOT so many years ago a campaign cry against the party in power was that it supported a million-dollar-Congress. The Opposition pointed out that the truth of that accusation was all that was necessary in an appeal to the voters to "put the rascals out," and to elect a Congress of men who would have a proper regard for the taxpayer.

But times have changed, and ideas seem different. Today one-sixth of our entire population is supported by the Government; Congress passes, with but meager debate, a four billion eight hundred million appropriation bill, which calls for tremendous tax support; the National Recovery Administration has upon its pay rolls 70 executives, who draw in annual salaries $502,756. That seventy represent the bosses who supervise an army of individual salaried men and women, whose business it is to carry on the Government's activities—frequently with an eye to the length of the job, rather than the efficiency of it. The taxpayer is paying millions, annually, to men whose reputed duty it is to see that business conducts itself properly. They pay over a half million dollars yearly to a few executives, in one single administrative agency; and this may be duplicated many times in other Government agencies—all in the name of "Recovery."

From the days when a political party which voted a million dollars for the total cost of National Government, to a time when one new branch of that government (the NRA) costs 42 millions annually, certainly marks a vast change in national affairs. From a critical citizenry to a complacent one, marks a trend in public thinking that must not be ignored. Perhaps the populace is stunned into insensibility by stupendous figures.

To Stabilize the Coal Industry

THERE has been introduced in the Senate, by Mr. Guffey, a bill with which most coal men are thoroughly familiar; a bill designed to stabilize the coal industry. The Senate Interstate Commerce Committee has reported the bill, with recommendations for its passage.

The coal industry is decidedly divided in opinion as to the wisdom of its passage, and its efficacy in solving coal's problems. Those in favor of it believe that "there must be legislation for coal with teeth in it"; those who oppose the bill declare that it is unfair and harmful to large parts of the industry.

The Guffey bill certainly presents far-reaching ramifications. Would its passage raise the price of coal to the consumer? And if so, what about the competition of oil and gas which have already made serious inroads into coal's markets? The bill goes far by allocating tonnage; by placing the industry squarely under the direction of political agencies, and creating a Government controlled and directed monopoly. It proposes to limit production and fix prices; to confer tremendous powers upon a national labor organization, and in addition, it proposes an expenditure of three hundred millions for the purchase of properties withdrawn by the Government from production.

Whatever the final outcome of this proposal, certainly coal men should make it their business to understand just what its passage means to the industry. Are the proposals sound? Will the bill aid the coal industry? Does it open the door to unlimited Government supervision and control of private enterprise? And certainly such a bill should have the explicit endorsement of a major part of the industry before it is allowed to become a law.

One Killed—Eight Injured

HEADLINES recently announced "one killed and eight injured," as the result of a controversy between the Progressive Union of Illinois, and District Managers of the United Mine Workers of America. The "one killed" belonged to the Progressive branch of the workers' union. The district president of the United Mine Workers is under arrest, charged with murder. Headlines have too frequently carried similar items. And the battle continues to rage between two groups seeking control—groups apparently organized to win at whatever cost.

Industrial strife is not confined to the mining industry, but there is sufficient evidence that the policies actuating mine labor organizations need revising. Organized labor should purge itself of the policy of taking by force those things that cannot be secured in orderly competition.

It is well to remember that this is the group which believes it is competent to tell the coal industry how to run its affairs—groups that adopt tactics of force and death and destruction. This is the group that seeks to be all-powerful in the mining fields. This is the group behind the present legislative drive involving the coal industry. Surely before any greater power is put in their hands, they should be forced to prove that they are competent, and that the policy of rule-at-any-cost, has been supplanted by equitable and fair methods of collective bargaining.

The Future of the NRA

CONGRESSIONAL committees have been swamped with hearings upon bills that have been hurled into the legislative hopper. Congressional galleries have been packed daily with spectators for the "greatest show on earth." Chief among the topics of interest is that of the future of the National Industrial Recovery Act reaching a high

point with the publication of the Brookings Institution's discourse on this subject. Perhaps the most interesting of the witnesses in behalf of the favorite child of the Administration was its father, General Hugh Johnson. In his usual picturesque style he urged the committee not to "throw the baby down the drain pipe with the dirty water," but to rather "scrub the infant vigorously." Admitting that Section 7-a has failed the General advocated that:

"The law should provide that there be no coercion either by company or by labor; when a labor majority chooses one union, no other union should be recognized; membership in no union should be made a condition of employment; employe representation elections should be held off company property under Government auspices; and labor tribunals should not be in or under any Government department."

It is generally recognized that code enforcement has failed so signally that it has practically nullified the Codes of Fair Competition. Whether NRA stays in the picture, or is superseded by a different type of legislation, it has demonstrated that blanket control of the production facilities of this country by political edict is unfeasible, and that the sooner we get back to the sound doctrine of the law of supply and demand the better off industry and the country will be.

The Government in Business

THERE is in the United States an almost universal criticism of the fundamental principle of government in business. More business in government and less government in business is a phrase which meets general approval. Specifically, it is never approved as it applies to some local expenditure of public money or the enhancement of community interest. The Tennessee Valley Authority is a program of public beneficence in the Tennessee Valley but nowhere else. The proposals to establish other enterprises of similar character are only approved by those who either have already benefited by similar enterprise or who anticipate benefit from the proposed enterprise. The Columbia River Development in Washington and Oregon proposes to develop hydro-electric power and to bring under cultivation thousands of acres now unproductive. A non-existent future scarcity of food material can be the only justification for the vast expenditures of money thus anticipated. Until our consumption can be so increased as to absorb more produce than is now possible from present farm equipment, entry of Government into that field of enterprise is not only unwise in principle but also will add still further burdens to those farmers now equipped to supply all the present needs of our market.

Experience and Common Sense

IT IS very gratifying to note that those having in charge the export of agricultural goods production are waking up to the fact that the export of agricultural products has been falling off to a very marked degree, which, by contrast with the sale of automobiles and farm machinery abroad, indicate a trend which is very dangerous to the agricultural industry. It is announced that the sale of automobiles abroad during the year 1934, increased 120 percent and exports of cotton slumped 30 percent. These wise gentlemen now propose that there shall be one agency for the control of all exports and that these shall be apportioned upon some basis which would give to agriculture what it calls an even break. Administrator Charles C. Davis of the CCC, insists that "it is a great deal more important that other countries should buy our farm commodities, especially cotton, than autos." And he predicts the time will come when our Government will have to apportion exports "to preserve a fair share of our export market for agriculture. It is proposed that this Federal export agency shall say to the London citizen who wants to buy an automobile and has the money to pay for it, "We will not sell you an automobile, but here we will sell you a quantity of cotton or of cabbage." We can quite wisely say to this British customer "perhaps you do not need cotton, but perhaps you can use cabbage. Unless you buy cabbage with your surplus money, we shall refuse to take from your country the Welch tin which is so essential in the carrying on of our own industry in America. We do not need to search the pages of history to find out that in our own small experience we buy the things that we want and in the market which will furnish those goods most cheaply. When will we learn that efficiency is the secret of market control? The cost of cotton and cotton piece goods in this country has been increased by Federal interference more than 30 percent and by virtue of this increase we have closed markets in foreign countries to our goods. The cost of automobiles in the United States has decreased approximately 30 percent, and we have increased our export in one year 120 percent. When will we learn that efficiency is the key which locks the door against imports and which opens the door for markets to our exports. When will we recognize that the market price of everything that we buy represents the cost of labor and as wages go up, prices go up, and therefore that the measure of a proper wage in dollars and cents is not a proper measuring device. May we repeat that a proper wage is one which will permit the workman to live decently, educate his family properly, and if he is prudent and industrious, enable him, during his working years, to save enough money to protect his old age. Anything less than that is unfair to the workman and anything more than that is unfair to the consumer. When will we learn that a high-wage country cannot compete with a low-wage country except there is some system of protection which may make a difference in those wages.

When will we learn that all of those various plans to aid the farmer, whether governmental or industrial, turns towards confusion and failure, because they disturb the only processes by which he can hope to succeed. And now the Senate is giving serious deliberation to the Bankhead bill, which proposes to transform tenants into farm owners. There is not a farm tenant in the United States who cannot become the owner upon the farm which he now owns or another one equally good, very much less than it costs the owner who developed it, with a long-time credit at low rate of interest, whenever he can demonstrate his ability to operate the farm successfully. The man who cannot meet this requirement will not succeed by reason of government aid. The vote-speaking friend of the farmer has been continually educating him away from his business and all those who have yielded to those blandishments are now in need of aid of some sort. The law of supply and demand is the only law by which a farm or any other business can be successfully managed and any different aid given to him must be made up by taxpayers who earn their money in some other way. Whenever the farmer is put upon his own he will succeed and never otherwise.

Fallacies of Social Reform Through Codification of Industry

By R. C. ALLEN *

I AM going to deviate somewhat from the letter of the text and without getting too far out of bounds pass by code making and code administration to a consideration of things of deeper significance characterizing the general movement which has given birth to NRA and its relatives of the alphabet. There is an old saying that one sees not the woods but the trees. The NRA is but one of the trees lately sprung from a fecund soil to produce an unfamiliar forest, a strange growth obscuring the once familiar economic landscape. With its growth the old landmarks are fading from view. We need to relocate them—to keep them in view as we push forward into uncharted economic and social territory else we shall find ourselves floundering in a mirage of idealism, seduced from the ways of experience by the Pied Pipers of Utopianism.

The first symptom of panic displayed by the tenderfoot who is lost in the woods is repudiation of the compass. At first, regarding it with suspicion, he is convinced finally that it is defective, that the blue end of the needle no longer points north. In the end he throws it away and wanders erratically in search of a way out. Too many men prominent in current politics have repudiated the compass of experience—in panic they have thrown it away and wander on without sense of direction lost leaders of a lost horde. That this generation has repudiated so many of its ablest aspirants for leadership is a subject of frequent comment. I think of that phenomenon as one of many manifestations of the destructiveness of the revolutionary mood, one aspect of a general degratory movement which seems to be under way in literature, music, and religion, as well as in society, government, and industry. I wonder if in these hard years it is the inherited gregariousness of mankind that impels us to communal enterprises, to seek refuge in blind striving for standardized patterns, that sets us against variety and differentness in the social order. If, as it seems, nature in her processes is careless of the individual, it appears that the body politic in its present mood is positively hostile to him. It vaguely moves toward the casting of all humanity in a single mold. It would strike down the strong and raise up the weak, impoverish the rich and endow the poor, abolish the independent as well as the dependent classes—in short, would submerge us all in a Dead Sea of mediocrity. In the language of the existing popular regime, it would require the extinction of the "rugged individuals."

I have had opportunity to make some observations among people who have purged themselves of rugged individuals—in a nation that has all but extinguished the idea of individualism in business, in religion, in education, in social relations, in things of the spirit, in self-expression. By prison and banishment, fear and starvation it was done and after the lapse of nearly a generation these instruments are still the means by which the natural aspirations of the individual toward personal dignity and freedom are caused to wither to despair. The new society was made by cutting down those members who stood above the general level of their fellows. The forces of degradation, the leveling forces, are there triumphant.

Traveling westward from Cleveland I avoid the highway and take to the rails or the air the more quickly to leave behind the depressing monotony of the plains. But eastward I sacrifice time to the joy of the winding road, the hills and valleys of the plateau and the mountains beyond. The spirit is refreshed by the beauty, variety and grandeur of the landscape. I reflect on the evanescence of that landscape. In the yesterday of geological time it was different, nor will it be the same tomorrow. It is a compromise between the agents of erosion which work ceaselessly toward the reduction of that lovely country to a monotonous plain and other forces which tend to lift it higher, to rejuvenate its rivers and deepen its valleys—forces of uplift whose ancient triumph lifted mountain heads into the very azure of the sky. And so it seems that society likewise in any stage of development is a compromise between the forces which try to build it up and the agents of degradation which try to tear it down. And likewise is the spirit refreshed in a society in which there are mountains to climb and people with the spirit to climb them and repressed and destroyed in one which presents only the dead level plain of mediocrity.

The mining man has the habit of minding his own business. He would like to continue to do that. Perhaps that is the reason why the mining industry is taxed more heavily than any other, except the liquor industry, and gets the least in return from government.

No other business has developed more "rugged individuals"—so many self-reliant people of whom the existing popular regime requires that they be ashamed of themselves. If we are to understand that rugged individualism, popularly supposed to be the dominant characteristic of the successful American, is to have no place in the business world of the future, what, may we ask, is to be the fate of individualism of any other sort? I suppose that the next generation will in any event exhibit less of individualism in business because the economic conditions under which the individual has the widest, freest and most numerous opportunities have passed with the transition of this nation from industrial youth to industrial maturity. We have conquered the land, populated its inviting reaches as well as many of its waste places and bound it all together with railroads, highways, waterways, and other means of transportation and communication. We have established institutions for the development of the minds and the care of the bodies of all of the people and factories to supply every need and luxury. We have been so busy with all of this, our development has been so rapid, that we have taken little forethought of political and social adjustments to the rapidly changing environment. I think that we shall henceforth have to deal with social and political problems familiar to the older civilizations of Europe but rather new and strange to us. They were precipitated by the depression, were here in less serious form in pre-depression days and are not to be put aside with the return of prosperity. They are involved in the swift move to the left accompanied by a shifting of the emphasis from economic recovery to social reform.

* Vice President, Oglebay, Norton & Co.

Note: The substance of this article was delivered at the annual meeting, Western Division, The American Mining Congress, September, 1934; also before The American Society of Civil Engineers, Cleveland Section, December, 1934; and was elaborated upon in a paper before the annual meeting, The American Mining Congress, December, 1934.

As we grapple with these problems let us remember that advancing civilization has no debt to the commonality of men. Whether in science, art or industry, the gains have been made through the labors and aspirations of men endowed with extraordinary genius and creative ability. I believe it was Andrew Carnegie who said that if the ablest 3 percent of our men were to die simultaneously, our civilization would collapse like an egg shell. Yerkes and Brigham have given scientific validity to that statement through a study of the examination records of two million men in the late American army. Generalizing on that cross section of our able-bodied male population they find that only about 2 percent of our people have the innate capacity for leadership of high order and that only a small portion of these develop that innate capacity. If it be true that progressing civilization depends upon those leaders, that thin line of men at the top, it is important that we in some way preserve a system of society and a structure of government under which such men can continue to be developed. The conditions in America have been such as to foster production of such men. I suppose that no other country has offered such opportunity for the development of individual talent and leadership. It is the response to those opportunities by able men which produced the methods, systems and facilities for production of goods and services which made possible the progressive decrease in the hours of labor and the progressive increase in net returns to labor that has characterized the elapsed third of this century, which supported the high scale of living to which we have been accustomed and which gave promise of the ultimate conquest of poverty in this country.

But when government lays its hand on the businesses and properties which have been built by its citizens, it closes the door of opportunity for the coming generations of men. Business leaders are developed by business experience which in turn depends on business opportunity. They do not grow in government bureaus, they do not thrive under a regime which makes of the business executive merely the field agent of officialdom.

And when government usurps or helps organized masses of people to usurp the management of industry, the while it avoids responsibility of ownership, it prepares the way for expropriation of property and communal production of goods.

The attack on the right to own property is carried forward by those who possess little or none of it, on the social structure of the country by those who have no stake in it. There is nothing new in this attack. It makes headway now because the ranks of the propertyless and jobless have been swelled by the depression. The political response to it is expressed in various schemes for redistribution of wealth advanced in Congress and others such as those which have been much advertised in the recent political campaigns in California, Minnesota, Louisiana, and Mississippi, evidences of that moral deterioration which is the bitterest fruit of economic catastrophe.

The leaders of the extreme left know that short of communal ownership, there is no practical basis for division of property, no practical means of effecting it were a basis agreed upon and no means of maintaining wealth in the hands of the distributees. As matters stand we are all born without any property and departing take none away. Considering the millions each year arriving among us and departing, it is plain that short of pure communism, the maintenance of even an approximately equal distribution of wealth is a sheer impossibility even were the right to dispose of wealth shorn from the right to possess it. There is no satisfactory compromise between private ownership and communal ownership. The leaders of communism everywhere recognize that. It enables them to pursue a consistent and clear-cut policy. But the proponents of the individualistic order seem not to recognize it. Vaguely toying with the idea that the revolutionaries can be stayed with compromise measures, they commit the government to blundering experiments in production of goods, to business enterprises in competition with its citizens, to rules and regulations governing the every-day routine affairs of the productive elements of the people. Notwithstanding this it is not so much what has been already lost of the American system as it is the acceleration of the leftward movement that gives rise to apprehension for tomorrow, the rising waves of radicalism voiced by their Longs, Bilbos, Sinclairs, Townsends, Coughlins and other surf riders of the oncoming tide. Stunned by the catastrophe of 1929 and the financial and industrial debacle which followed, the industrialist, the financier, the manager, the substantial element of the country as a whole, those on whom we depend to make the wheels go 'round, have been largely inarticulate. Those who have attempted leadership toward recovery have been overwhelmed by the aggressive march of the radicals, their voices have been drowned by the babel of the idealists, reformers, and social wonder workers.

One of the many evidences of the political shift from economic recovery to social reform is the growing tendency by NRA to insist on clauses in codes for the government of industry which in effect divorce authority from responsibility in the management of industry, drive a wedge between ownership and management on one hand and labor on the other, foment discord and misunderstanding between the employed and the employers. One cannot get results in production by placing responsibility on management and at the same time depriving it of the indispensable means of discharging responsibility. The objectives of socialism are fostered by those requirements of codes which wrest authority from management while holding it responsible for employment and the maintenance of pay rolls at levels dictated by desires and demands and not by the value of production. I oppose all measures and policies of that character, whether they be executed through the officials of labor unions, code authorities, labor boards or any other authority, however constituted.

That famous section of NIRA, Section 7(a), gives no rights to labor that were not already possessed, that were not freely acknowledged by management. Of course, labor has always had the right to organize peacefully and free from coercion of management or coercion from any other source. But because those words comprising Section 7(a) were written into law there has arisen in the minds of employes in industry and hundreds of thousands of other citizens the presumption that there must be something very wrong with the organization of industry in relation to labor. By implication the management of industry is condemned and forced to defend itself against an accusation which, no doubt warranted in application to a very small portion of industry, is unfair in its application to industry as a whole. Against this background organized labor has seized upon Section 7(a) as legal, if not moral, authority for the impressment of employes.

About fifty million people in this country are normally gainfully employed. It is the objective of organized labor to unionize that multitude. Imagine fifty million of us to be organized in our respective units—by crafts, industries, professions, and vocations. Each union would be seeking its advantage, or rather what it should hold to be its advantage or what its leaders should hold to be its advantage. Together these unions comprising fifty million people would be seeking to advantage themselves at the cost of the remaining portion of the population. This is merely organization of society against itself, organization for prosecution of economic war among the organized groups and between them and the remaining portion of the population. The objective is of course to secure for the organized groups a larger share of the income of the country than they would otherwise get and as much of it as in any event would be possible.

In what does the income of the country consist? Most people think it is money because it is measured by statisticians in terms of dollars. If the wage classes could think of it in terms of goods—of bushels, tons, yards, and other units of production—they would approach the problem with greater intelligence. What we really have to divide is goods and services. The more goods and services we produce the richer we are, the more we have to divide among us. Wages and salaries must be paid from the total of goods and services rendered by the recipients. Any attempt to get more is bound to end ultimately in failure. The attempt to get more for labor than labor produces is the practical expression of unionism on a national scale, whatever in theory may justify that kind of organization of laboring people.

Labor in general does not understand all this. The laboring man is not an economist or a statistician. He has the vague idea that there exists somewhere an inexhaustible reservoir of riches from which he may be paid. He is told that by organizing on a national scale he will secure a much larger pro rata share by forced distributions from that reservoir. The method by which he is taught to strive for it is reduced labor, reduced production, and higher wages.

Well, let us have a measure of the sum over which this fierce and sordid quarrel is being conducted. Colonel Ayres, of The Cleveland Trust Company, has recently shown (Barron's September 7, 1934) that if the stockholders and everybody employed by corporations in the year 1929, had received an equal pro rata share of the income produced by corporations in that year, the distribution would have amounted to $131 per capita per month and that the actual distribution to wage earners was in that year $119 per capita per month. He shows further that if the entire national income of eighty-three billion dollars had been distributed to the fifty million gainfully employed people in that year, the distribution per capita would have been $138 per month. From these figures it is obvious that the recipients of wages in one of the most prosperous years in our history enjoyed nearly all of the income produced by employer corporations. Out of the relatively small portion which they did not receive was paid the services of management and capital. If all of that income had been paid to wage earners, nothing would have been left for the shareholder and there would have been no accretion to capital for new enterprises. Under any such distribution the whole machine of industry would soon run down and stop.

And I want to call your attention to what has been happening to production. Again referring to Colonel Ayres for authority, I find that production in this country per capita has shrunk since 1900 by about 30 percent; that today production per capita is about 25 percent lower than it was during the 1920's. The income that we have to divide among us grows yearly less and less. The natural outcome of the policy that we are now pursuing as a nation will be a still further and more rapid per capita shrinkage of the national income. A continuation of the attempt to get more pay for less work will in the end bring us all to poverty. We must have a complete reversal of that policy, one that recognizes that all we have to divide among us is what we produce and that we must have production before there is anything to divide. We have lost our perspective. We have lost sight of controlling fundamentals, simple but inexorable laws which we all ought to understand.

If there be any justification for the determination of hours, wages, and prices by law or by agreement with sanction of law it must rest solely on political expediency. The effect of such determinations by authority however constituted may at best avoid the extremest depths of business stagnation at the expense of prolonging the period of recovery. They are destined for abandonment if not through wisdom certainly through necessity. The motivating elements in the countless transactions of every hour are the needs, desires and whims of 130,000,000 individuals and these are not predictable, measurable, or controllable.

The total wage payable by any industry depends on the value of the goods it produces and that value in turn on the markets for those goods and those markets in turn on the desires and abilities of purchasers. The broadening of markets, increasing consumption of goods, increasing employment of labor, is to be attained by the lowering of values in terms of labor hours. That is what science and technology have done for us under competition based on the profit motive. In these times it is enough to regulate the hours of labor, to give employables so far as practicable a job leaving character and volume of production, prices and wages, to find the levels imposed by free play of commercial forces. Under wise regulation of working time wages will be adjusted to realized value of goods produced in relation to labor supply.

But I think we shall not have an early reversal of policy, unless in some way or other the status of the less able, less fortunate, less privileged classes is ame-

(*Continued on page* 103)

Wheels of Government

THE recent weeks have evidenced a more serious attitude on the part of the Congress toward enacting the necessary supply bills and taking action on measures which have originated in messages from the administration to the Capitol.

The NRA investigation, under the Nye-McCarran resolution, has come to the end of public hearings and the Senate Committee on Finance has the problem of continuing the NIRA under advisement. The Richberg bill, introduced by Committee Chairman Pat Harrison on March 13, has been subject to varying types and degrees of approval and criticism. Chairman of the National Industrial Recovery Board Donald Richberg, who was the first to testify at the investigation, cleverly defended the performance of the NRA before the sharp and skillful inquiry of a very critical Finance Committee. As the last witness to appear, Gen. Hugh S. Johnson, former administrator of the act, spoke frankly to the committee concerning the accomplishments and also the shortcomings of the recovery measure. Coincident with the testimony of General Johnson was the submission for the record by Senator King, of Utah, of a part of a publication on the NRA by the Brookings Institution. The parts of the Brookings' book which were submitted for the record were definitely critical of the NRA, its performance and results, and the officials of the Brookings Institution made public announcement of their deep regret at what they stated was a premature and partial publicity. The book was hurriedly made public and its sponsoring by the impartial fact-finding institution was sharply rebuked in a release written by Donald Richberg. A further bill providing for the extension of the NRA is in course of preparation and will be the subject of executive consideration in the Committee on Finance. Of importance to the mining industries was the testimony of Dr. C. K. Leith, vice chairman, Planning Committee for Mineral Policy, National Resources Board, as presented before the Senate Committee on Finance on the morning of April 16. Dr. Leith (having first been duly sworn by the chairman) spoke of the work of the Planning Committee for Mineral Policy and stated that "The business in minerals is essentially an interstate business and not intrastate, by the very nature of the concentration of minerals in a very few places." He referred to his committee investigation as along the lines of conservation and national defense and that the conclusions reached bore definite relation to these viewpoints. He asked permission to insert into the record a statement of principles developed after careful study of the varying conditions in the coal, oil, copper, lead and zinc industries, and of certain others to which specific reference was omitted. The general recommendations for permissive control of production and capacity are herewith presented:

Members, Senate Committee on Mines and Mining:

M. M. Logan, of Kentucky Chairman.
Key Pittman, of Nevada.
Carl Hayden, of Arizona.
Duncan U. Fletcher, of Florida.
W. J. Bulow, of South Dakota.
James P. Pope, of Idaho.
Elbert D. Thomas, of Utah.
Joseph F. Guffey, of Pennsylvania.
Lynn J. Frazier, of North Dakota.
James J. Davis, of Pennsylvania.
Charles L. McNary, of Oregon.

"(1) The bituminous coal, oil, copper and lead codes and the proposed zinc code, all contain provisions permitting the industry to control competition in one way or another, under Federal supervision. So far as controls have been used, the benefits seem to warrant continuance of some such provisions, after June, 1935. For bituminous coal and oil, the case for permitting control is clear. For copper, lead, and zinc, the case is not so evident, but conditions are serious enough to warrant some modification of the rule of unlimited competition after the expiration of the National Industrial Recovery Act.

"(2) While control of production and capacity by most industries is impracticable, except perhaps in emergencies, such control is in the public interest where destructive competition causes serious waste of an irreplaceable resource and endangers living standards of the mine workers, whose isolation, relative immobility, and hazardous life merit special consideration. In the special case of coal mining provision for minimum and maximum prices may also be justified.

"(3) This committee recommends the consideration of action by Congress empowering an appropriate agency, or agencies, where resource waste and depression of mine labor standards are found to be serious, to authorize systems for the control of output or capacity, or both of them, and where necessary, as in the case of coal mining, to authorize minimum and maximum prices, and to supervise the operation of such control. If necessary, the anti-trust laws should be specially amended to permit such action. In framing such legislation due regard should be had for the competitive interrelations of coal, oil, gas, and water power and of the nonferrous metals.

"(4) Authorization of any such system of control by the producers in an industry should be made contingent upon acceptance of whatever safeguards are deemed necessary by Congress to protect the mine workers and the consuming public, and upon assurance by the industry concerned that action will be taken to minimize resource waste.

"The question of labor safeguards is a special subject of great importance and involves a clarification of the responsibilities of the miners as well as protection of their rights and liberties. This subject will be considered by other agencies of the Government and is outside the special province of the committee.

"Regarding consumer safeguards, the committee feels that when an industry asks for the privilege of limiting competition, the supervisory authority should be given power to prescribe forms of accounts, to require reports, and to modify, disapprove, and review the operation of any proposal for price, production, or capacity control. At the same time, pro-

The Senate and House Committees on Mines and Mining will in the very near future, consider bills providing for the suspension of annual assessment work on mining claims held by location during the period July 1, 1934 to July 1, 1935.

ducers in the industry may reasonably ask to be protected against any unfair practices of organized and powerful consumers.

"(5) The committee makes no specific recommendations as to which agencies of the Government should be designated to administer the plan. The legislation necessary might take the form either of a separate act applicable to a single industry or of a general enabling act applicable to the natural resources industries as a group. In the case of bituminous coal and petroleum, it seems likely that separate acts might be preferred, to provide for special problems peculiar to these industries, such as the purchase of marginal mines, or the establishing of crude-oil quotas. In the case of copper, lead, zinc, etc., the general enabling act might be preferred, leaving each industry to avail itself of the act and propose a plan of control should conditions so require.

"In view of the common problems of the mining industries, and in some cases of the competition between them, we would, however, urge the importance of centering administrative responsibility under the same general auspices. . . .

"(6) Experience under the NRA codes has shown the importance of flexibility and administrative discretion. We suggest, therefore, that the choice of the particular method of control in a given case should be left to the administrative agency in council with the industry concerned, selecting from whatever methods may be authorized by Congress the ones best suited to the conditions of the industry. This would leave room for modification of the method of control in the light of experience and of judicial interpretation. A plan of control once approved, however, the powers of the administrative agency to require compliance should be made as clear and as complete as the constitutional powers of the Federal Government permit.

"(7) In general we recommend the selection of methods which leave a considerable field of competition among producing units in order to avoid the artificial maintenance of high-cost marginal enterprises."

At the suggestion of Senator La Follette, the entire report of the Planning Committee for Mineral Policy was embodied in the record of the investigation. The Committee on Ways and Means of the House of Representatives, which must also pass upon the extension of the NRA and must in part originate the revenue features of the act, has the matter under advisement and is expected to conduct hearings during the month of May.

The Lewis-Doughton Economic Security Act was passed by the House of Representatives April 19 without amendment from the floor. The bill, which is now in the Finance Committee of the Senate, provides for a pay roll tax of 3 percent to cover the unemployment insurance feature. It further provides for a pay roll tax of 3 percent for old-age pensions, plus an additional 3 percent from employes. The total tax levy of 9 percent is reached by 1948 and comes startlingly near to the 15 percent of pay roll which similar laws have placed upon the countries of Europe and the British Isles. The measure will be the subject of a very controversial situation in the Senate.

The Black 30-hour week bill is on the Senate calendar and a motion by the author, Senator Black (D., Ala.), to consider the bill was defeated by a decisive vote, the Democratic floor leader stating at the time that floor consideration previous to the development of the NRA extension legislation would be premature. The bill remains on the calendar with its ultimate disposition intimately dependent upon the action to be taken on NRA.

The Senate Committee on Education and Labor is meeting daily in executive session for the purpose of considering the National Labor Relations bill, introduced by Senator Wagner (D., New York). The bill is regarded as definitely harmful to the mining industries as well as to other industries affected. On the occasion of the appearance of the representatives of the mining industry at the hearing on this bill, the Hon. Donald A. Callahan, of Wallace, Idaho, made the following comment: "Stripped of all camouflage, the bill is a deliberate attempt to fasten upon industry in this country a system of organized labor affiliated with the national labor organization known as the American Federation of Labor." President R. C. Allen, of the Lake Superior Iron Ore Association, said to the committee: "I am not here to suggest amendments to this bill. We are opposed to the bill in toto for all of the reasons which Senator Callahan has advanced. . . . We are opposed to this bill because it drives a wedge between the management and the men. One cannot get results in production by putting the responsibility in another place. Mining is a hazardous business. The safety of the men is the responsibility of the management. You cannot protect the works, you cannot protect the lives and the health of these men unless there be discipline in the organization, and there is no discipline in an organization where the authority as well as the responsibility does not reside in the management. If this legislation is passed we shall have immediate trouble and continued chaos in a region in which for at least 40 years there have been peace and good relations between the management and the men." President Eugene McAuliffe, of the Union Pacific Coal Company, Omaha, Nebr., in speaking to the committee said in part: "I do not like even the theory of the bill as one friendly to organized labor. I would like to save labor from its destructive results. There is room for betterment in labor relationships, but changes, if they are to be permanent, must be approached carefully. Revolution is destructive, and to put the force and power of the Federal Government behind labor, without at the same time attaching restrictive provisions, would prove suicidal to labor."

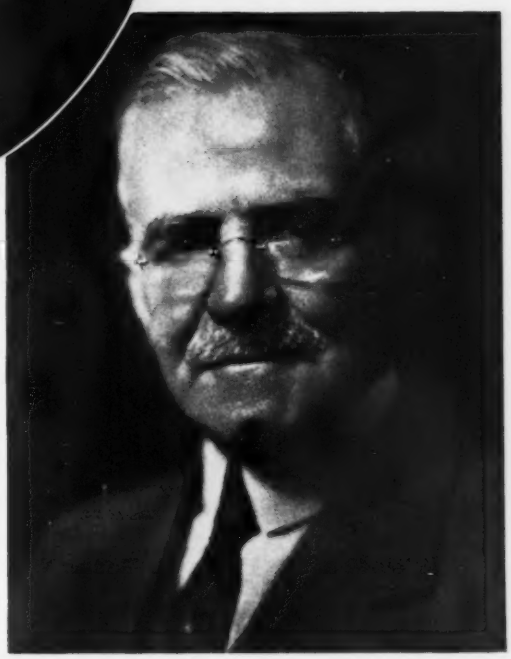
In the expressions by the representatives of industries, including agriculture, particular concern is evidenced in the fact that the bill does not in any way estop coercive practices on the part of employes. Agriculture further feels that the bill would increase costs of handling and processing farm products, impede industrial recovery by disrupting friendly relations between industry and labor, and benefit only a minority labor group. As pointed out by one farm organization leader, "All costs of manufacture and distribution, wage costs, pass on to the farm buyer. The processor of farm products not being able to advance his prices in an abundantly supplied consumer market, deducts the additional cost in the unionization of his plant from the price paid the producer. The farmer pays the increased costs going and coming."

The Guffey coal industry control bill, S. 2481, remains on the Senate calendar but with the expressed intention by Senator Logan (Dem., Kentucky) to move for its commitment to the Committee on Mines and Mining. The Guffey Federal coal control bill is in-

(*Concluded on page* 103)

U. S. DEPARTMENT OF MINES INCREASE IN APPROPRIATIONS OVER 1935

	Appropriated 1935	1936
Salaries and general expenses	$48,108	$62,190
Operating rescue cars	452,000	632,000
Mining investigations in Alaska	6,173	.....
Testing fuel	97,828	185,400
Mineral Mining Investigations	85,974	288,860
Oil and gas investigations	111,766	237,866
Expenses, mine experiment stations	127,036	195,450
Cars, etc., buildings and grounds, Pittsburgh, Pa.	61,908	87,690
Economics of mineral industries	207,133	262,855
Helium production	17,000	.....
	$1,214,926	$1,970,311



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National Chairman, Program Committee

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STATE CHAIRMEN

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F. S. Pfahler

H. C. Marchant

Rufus J. Ireland, Jr.

Jos. L. Osler

E. H. Wells

THE twelfth annual convention and exposition, scheduled for Music Hall, Cincinnati, Ohio, during the week of May 13, under the auspices of the Coal Division of The American Mining Congress, gives every promise of being the most outstanding of these very successful meetings. At this writing (April 25) the program committee has completed its work and presents in this issue a group of selected topics which make up a program that will adequately fill the need of the industry. Since early January the committee, composed of some 77 coal operating officials, has been busily engaged in arranging the program. As a basis for their work they sent a questionnaire to 6,000 of their fellow operators and received in return hundreds of suggestions for topics and for papers. They have done an excellent job in developing a well-rounded program and deserve the hearty cooperation and praise of the industry.

The work of the Coal Division, of which this convention is a part, is directed by E. J. Newbaker, vice president, The Berwind-White Coal Mining Company, as national chairman of the board of governors. The board is composed of well-known operators, including Thos. G. Fear, H. C. Frick Coke Company; A. J. Musser, Clearfield Bituminous Coal Corporation; T. M. Dodson. Weston Dodson & Company, Inc.; Otto Herres, United States Fuel Company; S. B. Johnson, Lorain Coal & Dock Company; G. P. Bartholomew, American Smelting & Refining Company; T. D. Lewis, Lehigh Navigation Coal Company; Ralph E. Taggart, Stonega Coke & Coal Company; R. L. Ireland, Jr., Hanna Coal Company; L. N. Thomas, Carbon Fuel Company; and T. J. Thomas, Valier Coal Company.

The work of this year's convention has been under the direction of Chas. F. Hamilton, vice president, Binkley Coal Company, and a widely distributed committee representing every coal producing district. The members of this committee are as follows:

State Chairmen:

F. S. Pfahler, president, Superior Coal Co.

H. G. Conrad, general superintendent, Knox Consolidated Coal Corpn.

H. L. Warner, general manager, Kanawha & Hocking Coal & Coke Co.

J. L. Osler, Blackwood Coal & Coke Co.

T. W. English, The Consolidation Coal Co.

R. A. Suppes, consulting engineer, Charleston, W. Va.

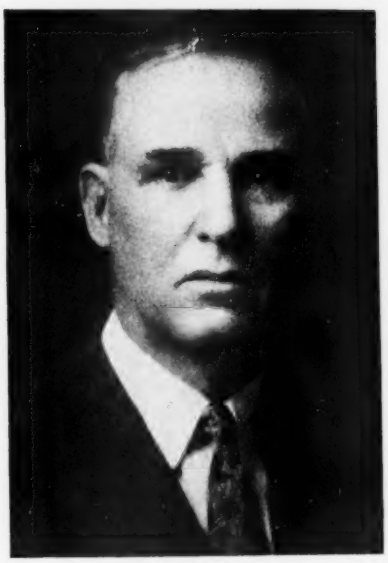
Richard T. Todhunter, general manager, Barnes & Tucker Co.

A. B. Jessup

Paul Weir

W. J. Jenkins

The Coal Industry's Representatives on the National Board of Directors of The American Mining Congress



Eugene McAuliffe

H. C. Marchant, secretary-treasurer, Rocky Mt. Coal Mining Institute.

Albert Gately, general superintendent, Republic Coal Co.

E. H. Wells, president, New Mexico School of Mines.

Moroni Heiner, president, Utah Fuel Co.

R. J. Ireland, Jr., assistant to president, Owl Creek Coal Mining Co.

Members:

T. J. Thomas, president, Valier Coal Co.

Paul Weir, vice president, Bell & Zoller Coal & Mining Co.

W. J. Jenkins, president, Consolidated Coal Co. of St. Louis.

Carl T. Hayden, general manager, Sahara Coal Co.

T. C. Mullins, president, Northern Illinois Coal Corporation.

L. D. Smith, vice president, Chicago, Wilmington & Franklin Coal Co.

George C. McFadden, assistant vice president, Peabody Coal Co.

C. J. Sandoe, vice president, Perry Coal Co.

George C. Campbell, vice president and general manager, Old Ben Coal Corpn.

Carl Elshoff, president, Mine B Coal Co.

James Hyslop, electrical engineer, Walter Bledsoe & Co.

S. M. Cassidy, superintendent, Saxton Coal Mining Co.

P. L. Donie, vice president, Little Betty Mining Corpn.

B. H. Schull, general manager, Binkley Coal Co.

Wesley S. Harris, president, Bicknell Coal Co.

H. M. Ferguson, president, Clinton Coal Co.

C. N. Templeton, general manager, Templeton Coal Co.

L. J. Lorms, assistant to president, Lorain Coal & Dock Co.

A. J. Musser

Thos. G. Fear

G. P. Bartholomew

Otto Herres

S. B. Johnson

Members

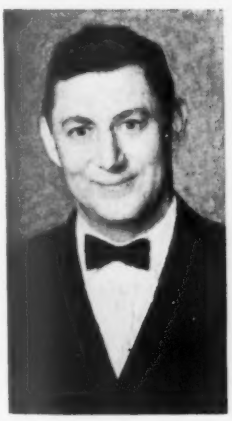
The Board of Governors

Coal Division

The American Mining

Congress

T. J. Thomas



R. L. Ireland Jr.

T. M. Dodson

T. D. Lewis

R. E. Taggart

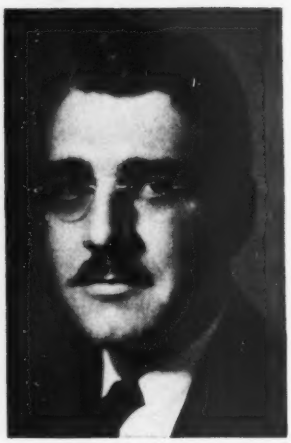
Committee on Arrangements

F. F. Jorgensen

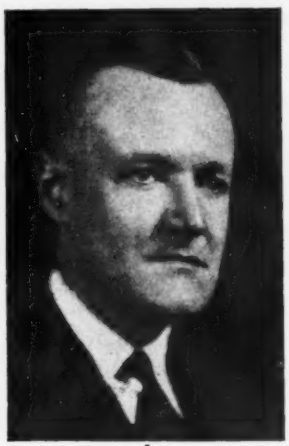
W. W. Dartnell

K. A. Spencer

Chas. W. Connor



Glenn H. Eddy



M. D. Cooper
Chairman, Committee on Arrangements

W. D. Turnbull

E. A. Williford*

Frank E. Mueller*

Wm. E. Goodman*

* Members, Board of Governors, Manufacturers Division.

Geo. F. McFadden

C. T. Hayden

C. J. Sandoe

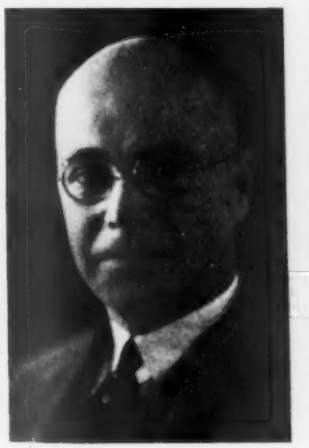
H. S. Gay

L. N. Thomas*

MEMBERS

PROGRAM COMMITTEE

W. J. Borries



W. P. Cayton

P. C. Thomas

John C. Cosgrove

I. N. Bayless

* Member, Board of Governors, Coal Division.

P. L. Donie

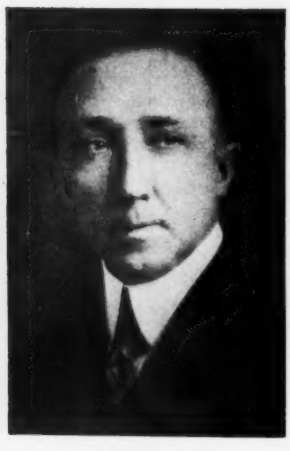
Geo. Campbell

R. H. Morris

Dr. L. E. Young

W. P. Vance

H. B. Husband



C. W. Gibbs

T. C. Mullins

G. S. Jones, general manager, The Ohio Collieries Co.

Wm. P. Cayton, president and general manager, Rail and River Coal Co.

W. F. Hazen, general superintendent, Wheeling Township Coal Mining Co.

W. J. Borries, general manager, Dawson-Daylight Coal Co.

Harry LaViers, manager, South-East Coal Co.

W. W. Dartnell, general manager, Valley Camp Coal Co.

Geo. Dunglinson, Jr., manager, Fuel Department, N. & W. Railway Co.

Carl L. Hornor, president, Hornor Bros. Engineers, Clarksburg, W. Va.

S. Austin Caperton, general manager, Slab Fork Coal Co.

Carel Robinson, manager of mines, Kelley's Creek Colliery Co.

Garner Williams, vice president, Cabin Creek Cons. Coal Co.

Harry M. Moses, general superintendent, United States Coal & Coke Co.

A. S. Wilson, general manager, Boone County Coal Corpn.

Wm. Beury, vice president, Algoma Coal & Coke Co.

Edw. Graff, general manager, The New River Co.

H. S. Gay, vice president and general manager, The Gay Coal & Coke Co.

Chas. W. Connor, general superintendent, Nellis Coal Corpn.

P. C. Graney, general manager, C. C. B. Smokeless Coal Co.

F. F. Jorgensen, manager of production, The Consolidation Coal Co.

L. C. Skeen, general manager, Fordson Coal Co.

R. H. Morris, general manager, Gauley Mountain Coal Co.

E. B. Agee, superintendent, Youngstown Mines Corpn.

Harold P. Tompkins, president, Tompkins Fuel Co.

H. B. Husband, general manager, Fuel Mine Operations, Chesapeake & Ohio Railway Co.

Geo. H. Morse, vice president, Union Collieries Co.

Robt. G. Pfahler, managing engineer, The Berwind-White Coal Mining Co.

C. W. Gibbs, general manager, Harwick Coal & Coke Co.

Thos. G. Fear, assistant to president, H. C. Frick Coke Co.

Dr. L. E. Young, vice president, Pittsburgh Coal Co.

D. D. Dodge, vice president in charge of operations, W. J. Rainey, Inc.

P. C. Thomas, vice president, Koppers Coal & Transportation Co.

H. L. Good, vice president, Westmoreland Coal Co.

Daniel Jamieson, Jr., superintendent, Lincoln Coal Co.

John C. Cosgrove, president, West Virginia Coal & Coke Corpn.

L. H. Schnerr, division manager, Pennsylvania Division, The Consolidation Coal Co.

M. D. Cooper, division general superintendent, Hillman Coal & Coke Co.

C. F. Keck, safety director, Jamison Coal & Coke Co.

W. F. Hazen

C. F. Keck

Harold P. Tompkins

Wm. Beury

D. D. Dodge

P. C. Graney

Wesley S. Harris

H. M. Ferguson

Harry La Viers

Edw. Graff

L. C. Skeen

Geo. Dunglingson, Jr.

PROG

THE AMERICAN MINING CONGRESS

PRACTICAL COAL

Music Hall, Cincinnati,

Monday, May 13

10.00 A. M.

CHAIRMAN: T. J. THOMAS, *President, Valier Coal Company*

INTRODUCING

E. J. NEWBAKER, *Vice President, The Berwind-White Coal Mining Co.*
National Chairman, Coal Division
CHAS. F. HAMILTON, *Vice President, Binkley Coal Co.*
National Chairman, Program Committee
GEO. R. DELAMATER, *Assistant Vice President, The W. S. Tyler Co.*
Chairman, Manufacturers Section, Coal Division

11.00 A. M.

EFFECT OF SHORTER WORKING HOURS ON COSTS

J. A. LUSE, *Algoma Coal & Coke Co.*

HUMAN ENGINEERING

R. B. GILMORE, *Knox Consolidated Coal Corp.*

Discussion:

WESLEY S. HARRIS, *President, Bicknell Coal Co.*
W. D. NORTHOVER, *Preparation Engineer, Rochester & Pittsburgh Coal Co.*

LAYER LOADING FOR UNIFORM PRODUCT

ALDER F. CASTANOLI, *Preparation Engineer, Koppers Coal & Transportation Co.*

2.30 P.M.

CHAIRMAN: W. L. AFFELDER, *Vice President, Hillman Coal & Coke Co.*

PRESENT TRENDS IN BREAKING DOWN COAL

K. L. MARSHALL, *Associate Mining Engineer, U. S. Bureau of Mines Experiment Station, Pittsburgh, Pa.*

Discussion:

CARDOX AS APPLIED TO DIFFICULT MECHANICAL LOADING IN UTAH

R. R. KIRKPATRICK, *Superintendent, Standard Coal Co.*

IMPORTANT FACTORS IN THE PRODUCTION OF LUMP COAL

J. BARAB, *Manager, Explosives Service Division, Hercules Powder Co.*
JOHN L. ROMIG, *Technical Division, Atlas Powder Co.*

POWER DISTRIBUTION TO CONCENTRATED MINING PANELS

JAMES HYSLOP, *Chief Engineer, Walter Bledsoe & Co.*

Discussion:

A. L. LEE, *Consulting Engineer.*
CHAS. M. MEANS, *Consulting Engineer.*

MULTIPLE SHIFTING

C. F. KECK, *Safety Director, Jamison Coal & Coke Co.*
JOHN H. RICHARDS, *Chief Mining Engineer, Hanna Coal Co. of Ohio.*

HANDLING DRAINAGE PROBLEMS

ROBERT WOOD, JR., *W. J. Rainey, Inc.*

Tuesday, May 14

10.00 A. M.

CHAIRMAN: PETER F. LOFTUS, *Consulting Engineer, Pittsburgh, Pa.*

HIGH POINTS IN COAL CLEANING IN 1934

NEWELL G. ALFORD, *Vice President, Eavenson, Alford & Hicks.*

Discussion:

WATER CLARIFICATION FOR COAL WASHERIES

HENRY F. HEBLEY, *Allen & Garcia Co.*

EVALUATING WASHED COAL

DAVID R. MITCHELL, *Assistant Professor of Mining and Metallurgical Engineering, University of Illinois.*

A PORTABLE LABORATORY COAL CRUSHER

D. A. MACWHIRTER and O. O. MALLERS, *Manager, Inspection Division, Appalachian Coals, Inc.*

MODERN TRUCK HAULAGE IN STRIP MINES

L. RUSSELL KELCE, *Vice President, Hume-Sinclair Coal Mining Co.*

Discussion:

C. R. BARNARD, *Mining Engineer, The Enos Coal Mining Company.*
C. W. WOOSLEY, *General Superintendent, Pyramid Coal Corp.*

HANDLING OF CARS ON CONVEYOR LOADING

M. A. EVANS, *Division Manager, C.C.B. Division, Koppers Coal & Transportation Co.*

Discussion:

H. M. FERGUSON, *President, Clinton Coal Co.*

2.00 P. M.

CHAIRMAN: J. H. PIERCE, *President, East Bear Ridge Collieries Co.*

COOPERATION BETWEEN OPERATOR AND MANUFACTURER ON EQUIPMENT DESIGN

R. H. MORRIS, *General Manager, Gauley Mountain Coal Co.*

FACE PREPARATORY METHODS EFFECT OF ILLUMINATION

CAREL ROBINSON, *Manager of Mines, Kelley's Creek Colliery Co.*

CLEANING AT FACE VS. TIPPLE

M. H. FORESTER, *Manager of Preparation, The Consolidation Coal Co.*

CAR SHIFTING BEHIND MECHANICAL LOADERS

P. L. DONIE, *Vice President, Little Betty Mining Corp.*

SHAKING CONVEYOR LOADING

GEO. B. PRYDE, *Vice President and General Manager, Union Pacific Coal Co.*

MECHANICAL LOADING AT OWL CREEK COAL COMPANY

P. H. BURNELL, *Superintendent, Owl Creek Coal Co.*

Wednesday, May 15

10.00 A. M.

CHAIRMAN: P. C. THOMAS, *Vice President, Koppers Coal & Transportation Co.*

MODERN MAIN LINE HAULAGE

WILLIAM LAMONT, *General Manager, Sterling Coal Co.*

Discussion:

W. W. DARTNELL, *Manager of Mines, Valley Camp Coal Co.*
R. M. FLEMING, *General Manager, Ebensburg Coal Co.*
J. G. CRAWFORD, *General Manager, Valier Coal Co.*

MECHANIZED ROCK OR COAL SLOPE SINKING AND MECHANIZED ROCK DISPOSAL ON SURFACE

GOMER REESE, *General Superintendent, The Kemmerer Coal Co.*

STEAM GENERATORS

F. N. BECKER, *Dir. of Research, Jeddo-Highland Coal Co.*

RAM

TWELFTH ANNUAL CONVENTION OPERATING MEN

Ohio, May 13-17, 1935

TIME CLOCKS AND RECORDING INJURIES
E. B. AGEE, *Superintendent, Dehue Mines, Youngstown Mines Corp.*

Discussion:
CHAS. W. CONNOR, *Superintendent of Mines, Nellis Coal Corp.*
H. S. GAY, *General Manager, The Gay Coal & Coke Co.*

2.00 P. M.

CHAIRMAN: W. W. DARTNELL, *Manager of Mines, Valley Camp Coal Co.*

MODERN MINE VENTILATION
A. W. HESSE, *Chief Engineer of Coal Mines, The Youngstown Sheet & Tube Co.*

Discussion:
RAYMOND MANCHA, *Goodman Manufacturing Co.*

SAFETY PROGRAMS
P. G. CONRAD, *Knox Consolidated Coal Corp.*

SAFETY IN MECHANIZED MINING
G. N. MCLELLAN, *Safety Engineer, Butler Consolidated Coal Co.*
E. F. STEVENS, *Manager, Union Colliery Co.*

MODERN COAL SCREENING
H. L. GRIFFIN, *Division Engineer, Federal Division, Koppers Coal & Transportation Co.*

Discussion:
THOS. A. STROUP, *Chief Engineer, West Virginia Coal & Coke Corp.*
THOS. L. GARWOOD, *New Orient Mine, Chicago, Wilmington & Franklin Coal Co.*

PREPARATION OF COAL FROM NO. 5 ILLINOIS SEAM AT PLANT OF DELTA COAL COMPANY, CARRIER MILLS, ILLINOIS
MERL C. KELCE, *General Superintendent, Delta Coal Mining Co.*

Thursday, May 16

10.00 A. M.

CHAIRMAN: GEO. B. PRYDE, *Vice President and General Manager, Union Pacific Coal Co.*

RECENT DEVELOPMENTS IN BRIQUETTING
P. F. HERRLY, *Vice President and General Manager, Panda Briquet Co.*

Discussion:
HARRY HEBENSTREIT, *Superintendent, Standard Briquette Co.*

TREATMENT BY OIL OR CHEMICAL TO IMPROVE QUALITY
D. JAMIESON, JR., *Superintendent, Lincoln Coal Co.*

Discussion:
O. B. PRYOR, *General Superintendent, Elm Grove Mining Co.*
GEO. A. STRUNCK, *Electrical Engineer, Old Ben Coal Corp.*
MAX TUTTLE, *Combustion Engineer, Knox Consolidated Coal Corp.*
J. D. DOHERTY, *Research Engineer, Koppers Coal Co., Inc.*

DEWATERING BITUMINOUS MINES
ELLSWORTH H. SHRIVER, *Raleigh Coal & Coke Co.*

Discussion:
S. AUSTIN CAPERTON, *General Manager, Slab Fork Coal Co.*
E. R. JOBES, *Superintendent, Kinloch Mine, Valley Camp Coal Co.*

MULTIPLE SHIFTING
D. D. DODGE, *Vice President, W. J. Rainey, Inc.*

2.00 P. M.

CHAIRMAN: R. E. TAGGART, *Vice President, Stonega Coke & Coal Co.*

EUROPEAN METHODS AS APPLICABLE TO UNITED STATES PRODUCTION
DR. L. E. YOUNG, *Vice President, Pittsburgh Coal Co.*

YOUR EQUIPMENT AND ITS RELATION TO PROFITS
WM. H. LESSER, *Electrical-Mechanical Engineer, James H. Pierce & Co.*

STEEP PITCH MINING METHODS BELOW SEA LEVEL IN SOUTHERN ANTHRACITE FIELD
W. B. GEISE, *Mining Engineer, Susquehanna Collieries Co.*

LOCOMOTIVE AND CUTTING MACHINE MAINTENANCE
T. W. GRAY, *Superintendent of Mechanical Equipment, Pittsburgh Coal Co.*

METHODS AND ADVANTAGES OF HEATING SERVICE WATER WITH ANTHRACITE
ALLEN J. JOHNSON, *Director, Anthracite Institute Laboratory*

TRUCKING OF COAL FROM PRODUCER TO CONSUMER
NORMAN F. PATTON, *Anthracite Institute*

6.30 P. M. to 2.00 A. M.

ANNUAL INFORMAL DINNER-DANCE
Hall of Mirrors, Netherland Plaza Hotel

Friday, May 17

10.00 A. M.

CHAIRMAN: DR. JOHN W. FINCH *Director, U. S. Bureau of Mines*

THE FUTURE OUTLOOK FOR COAL
HOWARD N. EAVENSON, *President, Eavenson, Alford & Hicks*

PURPOSE OF PLANNING COMMITTEE'S RECOMMENDATIONS FOR THE MINING INDUSTRY
DR. C. K. LEITH, *Vice Chairman, Planning Committee for Mineral Policy, National Resources Board*

Discussion:
J. P. WILLIAMS, JR., *President, Koppers Coal & Transportation Co.*
HOWARD I. YOUNG, *President, American Zinc, Lead & Smelting Co.*
J. D. A. MORROW, *President, Pittsburgh Coal Co.*
EUGENE MCAULIFFE, *President, Union Pacific Coal Co.*
R. C. ALLEN, *Vice President, Oglebay Norton & Co.*
LOUIS C. MADEIRA III, *Executive Director, Anthracite Institute*
SCOTT STEWART, *President, W. J. Rainey, Inc.*
E. J. NEWBAKER, *Vice President, The Berwind-White Coal Mining Co.*
JAMES PRENDERGAST, *President, Susquehanna Collieries Co.*
PAUL WEIR, *Vice President, Bell & Zoller Coal & Mining Co.*
D. A. CALLAHAN, *President, Callahan Zinc-Lead Co.*
D. A. THOMAS, *President, Montevallo Coal Mining Co.*

12.00 Noon

Special complimentary buffet luncheon; followed by a conducted tour and final inspection of all exhibits.

FINAL ADJOURNMENT

D. Jamieson, Jr.

James Hyslop

B. H. Schull

R. G. Pfahler

W. P. Vance, general superintendent, Butler Consolidated Coal Co.

A. W. Hesse, chief engineer, Youngstown Sheet & Tube Co.

A. B. Kelley, treasurer and general manager, Humphreys Coal & Coke Co.

Newell G. Alford, vice president, Eavenson, Alford & Hicks, Pittsburgh.

H. H. Bubb, general superintendent, Cokedale Plant, American Smelting & Refining Co.

D. R. Swem, manager of coal operations, Northwestern Improvement Co.

K. A. Spencer, vice president and manager, The Pittsburg and Midway Coal Mining Co.

Otto Herres, assistant manager, United States Fuel Co.

I. N. Bayless, assistant general manager, Union Pacific Coal Co.

Assisting the committee is the committee on arrangements, chaired by Maurice D. Cooper, division general superintendent, Hillman Coal & Coke Company. F. F. Jorgensen, Consolidation Coal Company, and Wm. E. Goodman, Goodman Manufacturing Company, will have charge of welcoming the delegates as they arrive; Chas. W. Connor, Nellis Coal Corporation, and Frank E. Mueller, Roberts & Schaefer Company, are in charge of "Open House" entertainment for Monday evening; Kenneth A. Spencer, Pittsburg & Midway Coal Mining Company, and E. Allan Williford, National Carbon Company, are responsible for the arrangements for the annual informal dinner; Glenn H. Eddy, Ohio Brass Company, will have charge of the prize awards; and W. D. Turnbull, Westinghouse Electric & Manufacturing Company, will direct and stage "Our Gang" in an amateur night. W. W. Dartnell, Valley Camp Coal Company, and Geo. H. Morse, Union Collieries Company, have served as a special committee on attendance.

The American Mining Congress is the national representative of the mining industry. It represents all branches of the industry, and this meeting is for the benefit of one of its major supporters—

Calendar of Entertainment

SUNDAY, MAY 12

4 to 7 P. M.—Informal Get-together Tea. Presidential Suite, Netherland Plaza Hotel.

MONDAY, MAY 13

9 P. M. to 2 A. M.—Open House. Dancing throughout the evening. Featured entertainment. The Lucky Dance, with delightful prize.

TUESDAY, MAY 14

Afternoon—A Garden Picnic for the ladies only. Mrs. A. E. Bendelari, hostess.

9 P. M. to 2 A. M.—Our Gang. Amateur Night. National Table Tennis Champion Match. Twelve acts by our own exhibitors. Dancing throughout the evening.

WEDNESDAY, MAY 15

Afternoon—A Tea for the ladies, at the lovely estate of Mrs. Charles L. Harrison.

9 P. M. to 2 A. M.—On the Riviera. A fascinating evening with the famous "Miners Octette" singing songs you love. And the Beauty Parade, sponsored by twenty coal companies. Prizes. Dancing until 2 o'clock to Glenn Lee's famous Movieland Orchestra.

THURSDAY, MAY 16

Afternoon—For the Ladies, a unique tea "When Were You Born."

6.30 P. M. to 2 A. M.—Annual Dinner; but more, **much** more than a dinner; 6.30 to 7.30, "Happiness Ahead"; 9 o'clock, the **thrill** of the week—**"The Mysterious Mr. D"**—unusual, guaranteed to keep you spellbound. Dancing throughout the dinner and until 2 o'clock to Glenn Lee's Orchestra. An evening you will **Remember.** No speaking, no formality. Just entertainment, good food, dancing and **fun.**

FOUR EVENINGS PACKED FULL OF HAPPINESS—LET'S SHARE IT!

L. D. Smith

A. S. Wilson

H. H. Bubb

A. W. Hesse

the coal group. The national organization is headed by Howard I Young, president, American Zinc, Lead & Smelting Company, and a board of directors representing the entire industry. Members of the board representing the coal industry are Paul Weir, Bell & Zoller Coal & Mining Company; W. J. Jenkins, Consolidated Coal Company of St. Louis; Eugene McAuliffe, Union Pacific Coal Company; and A. B. Jessup, Jeddo-Highland Coal Company.

James F. Callbreath, secretary emeritus of the organization, is a well-known figure in the coal industry, having actively directed the work of the national organization for some 30 years. Julian D. Conover is national secretary of The American Mining Congress, having been elected to that office in December, 1934. He is new to the coal industry but widely known in other metal groups where he served with distinction.

The convention and exposition are under the direction of E. R. Coombes, assistant to the secretary of The American Mining Congress, and G. B. Southward, mining engineer of the organization and a well-known coal man, especially noted for his work in mechanized mining.

It is obvious that the coal industry was never more serious about solving its production problems than this year. Faced, as the industry has been, with the harassing legislative situation, with a shorter work day and a high wage scale, and the threat of still higher wages and shorter working days, it has turned to the annual May meeting with relief and interest. This meeting sets a standard of cooperative effort achieved by few industries. The various groups, representing widely differing sections, problems and conditions, each year more firmly knit the cooperative spirit, and each district and each company in each district willingly give of their operating knowledge that their fellow operators may profit and that they in return may develop safer and more efficient methods of production.

Newell G. Alford

The convention will open on Monday morning, May 13, at 10 o'clock. There will be nine major sessions, averaging five papers to a session, each presenting timely and interesting topics for discussion. Briefly, the program presents the following phases of production problems: Safety and Human Relationships; Tipple Practice; Methods of Breaking Down Coal; Power Generation and Distribution; Multiple Shifting; Cleaning, Screening and Dedusting; Modern Strip Mine Practice; Mechanical Loading; Conveyor Systems of Mining; Main Line Haulage; Face Preparatory Methods; Cooperative Efforts of Operator and Manufacturer on Equipment Design; Ventilation; Briquetting; Oil or Chemical Treatment of Coal; Drainage Problems; Maintenance; and many other allied topics.

A feature of the program will be the Friday morning session, when the convention will lay aside its practical operating forum and consider some of the economic phases of the industry's future. Howard N. Eavenson will open the session with a presentation on "The Future Outlook for Coal," and will be followed by the distinguished Dr. C. K. Leith, vice chairman of the President's Planning Committee for Mineral Policy, National Resources Board, who will give his view of the committee's recommendations in behalf of the mining industry. A large group of important coal officials have accepted the program committee's invitation to discuss the subject with Dr. Leith, and it is anticipated that this will be an especially lively session. Dr. Leith is a well-known geologist and an authority upon mining problems. It is recognized that the recommendations of his committee may have a definite bearing upon the future of the coal industry, and, therefore, what he has to say should be listened to with attention. Among the operators who will participate in this phase of the program are: J. P. Williams, president, Koppers Coal & Transportation Company; J. D. A. Morrow, president, Pittsburgh Coal Company; Eugene McAuliffe, president, Union Pacific Coal Company; James Prendergast, president, Susquehanna Collieries Company; D. A. Thomas, president, Montevallo Coal Mining Company; Howard I. Young, president of The American Mining Congress; D. A. Callahan, a director of The American Mining Congress; and Dr. R. C. Allen, vice president, Oglebay Norton & Company.

While this meeting is primarily a business session, the lighter side of living has not been neglected. The committee on arrangements is planning that every unoccupied moment may be filled with pleasure. Beginning Monday night with the "Open House" program and ending Friday afternoon with a golf tournament, the maximum of pleasure is planned. The following is the interesting entertainment program:

Monday, May 13, 9 p. m. to 2 a. m. "Open House" . . . Dancing throughout the evening; featured entertainment . . . The Lucky Dance, with delightful prize . . . Food . . . Fun.

Mrs. A. E. Bendelari

Tuesday, May 14, 9 p. m. to 2 a. m. "Our Gang" . . . Amateur Night . . . National Table Tennis Champion Match . . . Twelve acts by the exhibitors . . . Dancing throughout the evening . . . A gay, happy evening, packed full of enjoyment.

Wednesday, May 15, 9 p. m. to 2 a. m. "On the Riviera" . . . A fascinating evening with the famous "Miners Octette" singing songs you love; and the "Beauty Parade," sponsored by 20 coal companies; prizes . . . Dancing until 2 o'clock to Glenn Lee's famous Movieland Orchestra.

Thursday, May 16, 6.30 p. m. to 2 a. m. Annual Dinner . . . but more, *much* more than a dinner; 6.30 to 7.30, "Happiness Ahead" . . . 9 o'clock, The THRILL of the week—"THE MYSTERIOUS MR. D" . . . unusual, guaranteed to keep you spellbound . . . Dancing throughout the dinner and until 2 o'clock to Glenn Lee's Orchestra . . . An evening you will REMEMBER . . . No speaking, no formality; just entertainment, good food, dancing and fun.

The ladies are cordially invited and ample arrangements for their entertainment have been arranged. Mrs. A. E. Bendelari, wife of the president of the Eagle-Picher Lead Company, and Mrs. Charles L. Harrison, Cincinnati social leader, assisted by Mrs. E. W. Edwards, also well-known Cincinnati society leader, are arranging a series of events that insure a pleasurable stay. Among the things planned for the visiting ladies are luncheons, a garden picnic, teas, and an unusual "When Were You Born" event. Ladies are invited to all entertainment features of the convention. Mrs. Mark Egan, wife of the Cincinnati convention bureau chief, will serve as special representative for the visiting ladies and the local committee. She will be assisted by Miss Amy Pace, of the Netherland Plaza Hotel.

Mark Egan

The Cincinnati local group are taking an active interest in the convention and in the entertainment features. Mark Egan, secretary of the convention bureau of the Chamber of Commerce, is in charge of local arrangements, and is having the cooperation of the Cincinnati Coal Exchange and Appalachian Coals, Inc., in making the meeting a local success.

If coming events do cast their shadow, it is evident that the 1935 meeting will go down in history as the greatest coal convention ever arranged by this group. It is anticipated that more than 2,000 coal operators will visit Cincinnati during the week of May 13, and that the convention will establish an all-time record.

The efforts of this outstanding group of coal men demand the cooperation of their fellow operators. Come to Cincinnati during the week of May 13. There is a hearty welcome waiting and a marvelous opportunity to gain in knowledge, fellowship, and underground of the industry's problems and how they are being solved.

These conventions open the door of real opportunity to every producing company, and if they will cooperate with the management, every man they send will come back a better informed person and more valuable employe. A special effort is being made this year to bring the maximum return to those companies sending men to this convention and exposition.

Music Hall, Cincinnati, Ohio

THE COAL EXPOSITION

Bruce Shotten

Chas. Officer

W. C. Richards

Chas. Whaley

Board of Governors

Manufacturers Section

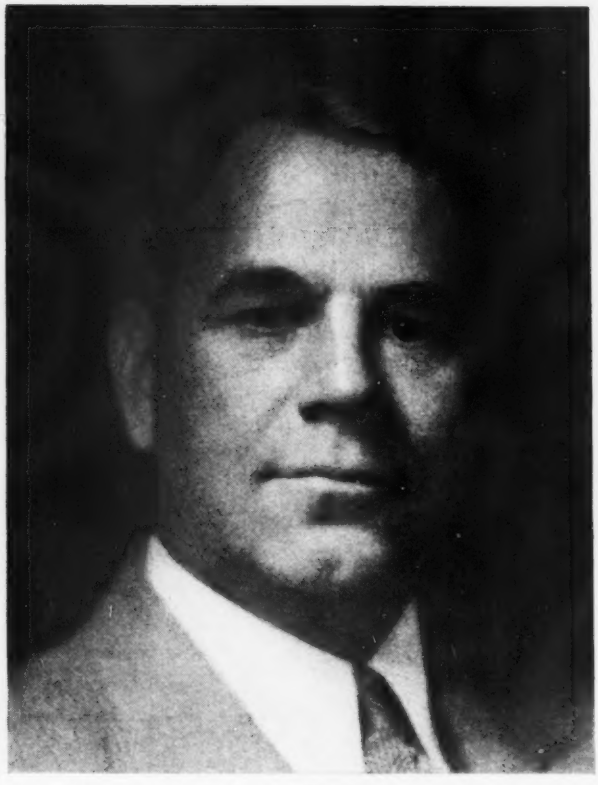
Coal Division

John T. Ryan

J. Milton Duff

P. H. Grunnagle

J. C. Wilson



L. W. SHUGG
Director of Exhibits

Courtesy of the General Electric Company

WHEN 120 manufacturers of mining machinery, equipment, and supplies have purchased some 50,000 sq. ft. of floor space to demonstrate their wares, it may safely be said that an exposition so patronized is a success. With the exposition some three weeks away, practically every inch of floor space at Music Hall, the home of the convention and exposition of the Coal Division of the American Mining Congress, it is a foregone conclusion that the meeting will be remarkable.

This is the twelfth exposition to be held in conjunction with the convention of practical coal operating officials. Twelve years ago a mere handful of manufacturers visioned the present-day splendid "Machinery and Equipment Mart" and organized under the banner of the American Mining Congress for the purpose of cooperating with coal-producing men. That little group has now grown to some 47 members, and a real roster of "Who-Is-Who" in the mining equipment field.

The exposition is headed this year by Mr. George R. Delamater, vice president, The W. S. Tyler Company of Cleveland, Ohio, who is chairman of the Manufacturers Section of the Coal Division of the American Mining Congress. He is ably assisted by a national board of governors, representing the following leading firms:

William E. Goodman, Goodman Manufacturing Company; W. C. Richards, A. Leschen & Sons Rope Company; Roy L. Cox, Jeffrey Manufacturing Company; E. A. Williford, National Carbon Company; C. B. Officer, Sullivan Machinery Company; L. W. Shugg, General Electric Company; J. C. Wilson, Ohio Brass Company; P. H. Grunnagle, Westinghouse Electric & Manufacturing Company; John T. Ryan, Mine Safety Appliances Company; George R. Delamater, The W. S. Tyler Company; B. G. Shotton, Hendrick Manufacturing Company; J. Milton Duff, Phillips Mine & Mill Supply Company; Frank E. Mueller, Roberts and Schaefer Company; Charles C. Whaley, Myers-Whaley Company.

The exposition is again to have the assistance of the nationally known exposition authority, Mr. L. W. Shugg, General Electric Company, Schenectady, N. Y., who will serve as "director of exhibits." The convention and exposition are indebted to this company for their splendid cooperation each year in permitting Mr. Shugg to assist, thus insuring the maximum of efficiency and service in the handling of the exposition.

The 120 manufacturing concerns participating this year have given yeoman service in making the meeting a success. Their exhibits will be unusual, timely, and decidedly interesting. Many new things will be presented and every effort will be made to give the operating man the greatest possible information on how the manufacturer can and does assist in developing efficiency and safety in operating practice.

Space prohibits giving a complete outline of all of the material on exhibit, but the following will serve to indicate the splendid array that will be presented at Music Hall, the week of May 13:

A

Ahlberg Bearing Co.
Alemite Sales Co.
Allen-Sherman-Hoff Co.
Allis-Chalmers Manufacturing Co.
American Brattice Cloth Co.
American Car & Foundry Co.
American Cast Iron Pipe Co.
American Sheet & Tin Plate Co.
American Steel & Wire Co.
American Telephone & Telegraph Co.
Atlas Powder Co.
Automatic Reclosing Circuit Breaker Co.

B

Bethlehem Steel Co.
Brown-Fayro Co.
Bucyrus-Erie Co.

C

Carnegie Steel Co.
Caterpillar Tractor Co.
Chicago Pneumatic Tool Co.
Cincinnati Mine Machinery Co.
Coal Mine Equipment Sales Co.
Coal Mining.
Columbia Alkali Corp.

D

Deister Concentrator Co., The.
Deming Co., The.
Duncan Foundry & Machine Works, Inc.
du Pont de Nemours & Co., Inc., E. I.
Duquesne Slag Products Co.

E

Edison Storage Battery Co.
Electric Railway Equipment Co.
Electric Railway Improvement Co.
Electric Storage Battery Co.
Enterprise Wheel & Car Co.

F

Fafnir Bearing Co.
Fairmont Mining Machinery Co.
Flood City Brass & Electric Co.

G

General Electric Co.
General Explosives Corp.
General Steel Castings Corp.
Goodman Manufacturing Co.
Gulf Refining Co.

H

Hazard Wire Rope Co.
Hendrick Manufacturing Co.
Hercules Powder Co.
Hockensmith Wheel & Mine Car Co.
Hulburt Oil & Grease Co.

I

Irwin Foundry & Mine Car Co.
International Business Machine Corp.

J

Jeffrey Manufacturing Co.
Joy Manufacturing Co.

K

Kanawha Manufacturing Co.
Koppers-Rheolaveur Co.
Keystone Lubricating Co.

L

LaBour Co., Inc.
Ladel Conveyor & Manufacturing Co.

Views of North and South Halls 1934 Exposition

Lehigh Safety Shoe Co.
Leschen & Sons Rope Co., A.
Lorain Steel Co.
Link-Belt Co.

M

Macwhyte Co.
Mancha Storage Battery Co.
Marion Steam Shovel Co.
Marlin Rockwell Co.
McGraw-Hill Publishing Co.
McNally-Pittsburgh Manufacturing Co.
Miner, Inc., W. H.
Mine Safety Appliances Co.
Mining Congress Journal
Morrow Manufacturing Co.
Myers-Whaley Co.

N

National Carbon Co.
National Electric Coil Co.
National Malleable & Steel Castings Co.
New Departure Manufacturing Co.
Nordberg Manufacturing Co.
Norma-Hoffmann Bearings Corp.

O

Ohio Brass Co.

P

Penn Machine Co.
Penna. Electric Repair Co.
Phillips Mine & Mill Supply Co.
Pittsburgh Knife & Forge Company
Portable Lamp & Equipment Co.
Post-Glover Electric Co.
Princeton Foundry & Supply Co.
Prox Co., Frank.
Pure Oil Co.

R

Republic Steel Corp.
Roberts & Schaefer Co.
Robins Conveying Belt Co.
Robinson Ventilating Co.
Roebling's Sons Rope Co., John A.

S

Safety Equipment Service Co.
Safety First Supply Co.
Safety Mining Co.
St. Louis Power Shovel Co.
Sanford-Day Iron Works, Inc.
S K F Industries, Inc.
Standard Oil Co. (Ind.).
Stephens-Adamson Mfg. Co.
Streeter-Amet Co.
Sullivan Machinery Co.
Sun Oil Co.

T

The Texas Co.
Tide Water Oil Co.
Timken Roller Bearing Co.
Toledo Scale Co.
Tool Steel Gear & Pinion Co.
Tracy Co., Bertrand P.
Tyler Co., The W. S.
Tyson Roller Bearing Corp.

U

United States Bureau of Mines.
Universal Lubricating Co.
Utility Conveyor & Mine Equipment Co.

W

Watt Car & Wheel Co.
Weir Kilby Corp.
Westinghouse Electric & Mfg. Co.
West Virginia Rail Co.
Wood Preserving Corp.

Of all things . . .

AFTER all there is a limit on just how many jobs one man can hold down—efficiently. . . . Even so efficient an Administrator as Harold Ickes gets into difficulty once in a while. . . .

■ ■ ■

Somebody had an idea not long ago that it would be a great thing for that wind-swept southern Colorado area to run a tunnel under the Rocky Mountains and divert water from the Colorado River to the South Platte (forgetting that it might cut off water supply for the Boulder Dam and that it would be a right pert engineering feat).

■ ■ ■

Public Works Administrator Ickes allotted the Reclamation Bureau $150,000 to look into the thing and see if it approved. Secretary of Interior Ickes (head of the Reclamation Bureau) favored it; Secretary of Interior Ickes (head of the National Park Service) opposed it; so to settle it Secretary Ickes, now acting as head of the Geological Survey, countermanded all previous orders and told the latter group to find out if the thing was feasible. . . . Still pending is a suggestion to ask the Agriculture Department if the water would help the Colorado sugar growers.

■ ■ ■

Here's one that ought to bring tears to somebody's eyes. . . . The customs service wants 50 additional border patrolmen to guard against onion smuggling from Canada into the United States. . . . This sounds sort of tearful, especially when one realizes that from 1929 to 1932 we imported less than 500 bushels; in 1932-33, 89,000 bushels. The 50 additional patrolmen would cost the taxpayers $150,000 a year—more than the cost of the onions brought in from Canada. . . . Not to speak of the "crying" job it is to be constantly on guard against onion smugglers.

■ ■ ■

The NRA is going to take a hand in this Fourth of July business. . . . Probably with the idea of making the Fourth safe for the children. . . . Effective July 6 this year the maximum size of firecrackers will be four inches long and five-eighths of an inch in diameter. . . . That was a code regulation approved recently by the august Recovery Board. . . . The idea seems to be that on the Fourth the children can shoot off crackers as big as they want—or can buy. . . . But two days later they're violating a code if the firecrackers are bigger than regulation. . . . Once upon a time a four-inch cracker was what the kids called "giants." . . . Now under the code it has become a "little fellow." . . . Else why would the NRA be interested?

■ ■ ■

It isn't all a bed of roses in the Democratic camp. . . . Far from it . . . and all the complaints don't come from the Republicans. . . . An air of restiveness about the New Deal pervades the Senate. . . . Some of the recent comments of majority leaders:

"We cannot go on running the Government on hot air, on money pulled down from the heavens, which the taxpayers will have to pull back."

"The course we are pursuing is a false course. We are near enough to the edge of the precipice. . . ."

"There is no money. And yet we are going on and on and on, attempting to continue to do over again the same thing that failed in our past experiments. . . . I think we are on the wrong path. . . . "

". . . The time has come when temporary and emergency legislation should yield to sound principles."

"We have sold our farm business for a mess of pottage. . . ."

And talking about voting for adjournment before the so-called Administration "must" bills are disposed of:

Senator Theodore Bilbo (Miss.): "Stay all summer and see if I care. . . . I'd vote for adjournment as soon as we provide a pension for the aged."
Senator Carter Glass (Va.): "I am ready to go home now."

And two Senators whom we promised would be "off the record":

"Let's go home before we do any more damage."
"It would be a darn sight better for the whole country if we got out of here right now."

■ ■ ■

Some things Uncle Sam does:

Supplies the Justices of the United States Supreme Court with quill pens—which they do not use. . . . Promulgated an NRA code to cover graveyards and their operation. . . . Measures the heat of a candle five miles away. . . . Supports directly more than one-sixth of the total population of the Nation (nearly 21,000,000 persons). . . .

■ ■ ■

It takes 40 men to guard the doors of the United States Senate. . . . Not that it takes any guarding or that the Senators are worried about who comes in. . . . But after all there are 10 doors to watch. . . . And four men at a door relieve the tedious monotony of watching things for the long four or five hour shifts that the Senate is in session. . . .

■ ■ ■

Incidentally the Capitol, in addition to Congressmen and Senators, employs 4,000 persons. . . . Secretaries, clerks, stenographers, elevator operators, charmen and charwomen, messengers, and of course, doormen. . . . But the electric light supplied in the Capitol is sufficient for a city of 50,000 population. . . .

COWS and COAL

By M. W. VON BERNEWITZ

COWS and COAL—a peculiar combination. But not so strange when the coal is used for power in the preparation of by-products from the cows. In the Auckland Province of the North Island of New Zealand is perhaps the world's largest dairying concern—The New Zealand Co-operative Dairy Company, Limited. Indirectly and through subsidiaries this 14-year-old firm has reserves consisting of 410,000 cows and 15,000,000 tons of unmined coal. The plants consist of 16 butter factories, 19 cheese factories, 3 milk-powder factories, a box factory, a can factory, and a coal mine. The last-mentioned is operated by the Glen Afton Collieries, Limited, and is the subject of this article.

The Coal Mine

Actually, Glen Afton mine consists of three adjoining properties. Two of them, mines 1 and 2, are connected underground. The third mine is not being worked at present. The current output is 700 tons a day. All are drift mines in hilly to rolling country, up to 800 feet altitude.

Coal Bed.—The Waikato coal lies in fireclay, above which is limestone. The bed is undulating and is faulted from 1 foot to 70 feet or more. The coal is 4 to 26 feet thick. It has no regular bands or partings, but contains "floating" stones. The coal is of salt-water origin and contains fossil shells of marine times. It would rank as cannel or subbituminous in the United States. Resin is plentiful as thin seams and small pockets. Overburden is as thick as 700 feet, on mine 1, but a third of this on mine 2. The coal fires spontaneously. In general, the workings are moist to wet, and pumps are required. Some rock-dusting is done by hand, the dust being collected from the boiler flues of the factories and railed to the mine.

Development and Mining.—As Mines 1 and 2 are worked similarly, the former will be described. It is opened by three parallel drifts 80 feet apart and each 7 by 10 feet in cross section. The mine is laid out in panels, the system of mining being bord and pillar. If necessary, these panels are easily sealed. The coal left up in advance work is recovered on the retreat.

In mining, 9-foot places are center-sheared 6½ feet deep vertically and horizontally. The cut is 3 inches wide. A coal-cutting machine specially designed for this coal is described in volume 14 of the *New Zealand Journal of Science and Technology* (1933) by Peter Hunter, superintendent of the collieries and to whom the writer is indebted for showing him the mines. This machine weighs only 1,800 pounds and can easily be handled on heavy grades. It is electrically driven by a 10-horsepower motor. The cutter was constructed to meet local conditions, and can cut horizontally at any height up to 5 feet from the floor and 14 1-3 feet wide by a depth of 6½ feet without moving the machine from its position on the rails. It can also cut, from the same position, from roof to floor 9 feet high and 6½ feet deep. As a rule, six to eight places per shift can be cut and drilled. The output of coal per man-shift on coal by hand work is 6 tons, but by this machine it is now nearly 14 tons. Underground costs have been reduced 16 percent and the quantity of large coal won has increased by 20 percent.

Blasting.—Faces that are sheared have one hole drilled near each corner. Monobel, a "permitted" explosive, fired by electric detonator, is used. Miners drill the holes, but charge them under the supervision of the shotfirer, who sets them off, one at a time.

Ventilation.—A little gas is sometimes liberated and a fireboss examines the workings before the start of a shift. Open lights are carried, but closed lights in main headings. Ventilation of mine 1 is effected by a 72-inch double-inlet Sirocco fan displacing 80,000 cubic feet per minute on a water gage of 2½ inches. As the mine is worked in panels, each panel is ventilated independently of other panels and at present there are six splits. Stoppings are of brick.

Haulage.—A feature of Glen Afton, and of the Renown mine nearby, is the underground rope haulage. It is an endless, electrically driven system, the 1⅛-inch rope running to the bottom of the main slope. Inside, are cross ropeways in panels. There is some hand and horse haulage to ropeways. Including the long ropeway to mine 2, Glen Afton has between four and five miles of such haulage. The undulating character of the coal bed and the hilly nature of the country make this the ideal method; electric locomotives could not manage the grades. The rope lasts several years. The trucks or cars are of sheet iron holding 1,500 pounds. They have no doors, but are emptied in a rotary dumper. Two trucks are attached to the rope by a grip. Underground and on the surface there is a continuous stream of full trucks on one road and empties on the other. The cost is between 2 and 4 cents per ton-mile. The Renown colliery ropeway near mine 2 of Glen Afton Collieries, inside, has ¾-mile of ⅞-inch rope traveling at 1¾ miles per hour. Outside is 2½ miles of 1⅛-inch rope, traveling at 2½ miles per hour. This rope has lasted 5 years and moves 700 tons per day.

Coal Preparation.—Glen Afton screening plant produces four sizes of coal: house, larger than 3½ inches; kitchen, 1⅛ inches; nut, 1 inch, and slack. Two sets of screens can each handle 1,000 tons in 8 hours. An average analysis of Glen Afton coal is 13 percent moisture, 48 percent fixed carbon, 37 percent volatile matter and 2 percent ash. Sulphur content is 0.36 percent and the heat value is 11,394 b.t.u.

Accident Prevention and Welfare.—In general, Glen Afton Collieries shows good housekeeping. The village of fifty 3, 4, and 5-room houses is neat, and tidiness is evident in the screening plant, power plant, shops, and changehouse.

Under the New Zealand Mining Regulations all mine officials must have knowledge of first-aid training. Some miners have been trained. There are first-aid kits in every mine panel. There is an ambulance room and equipment on the surface. No gas masks or rescue apparatus are available, but several men have had rescue training.

In the village, the houses are fully equipped, stand on ¼-acre sections, have facilities for gardens, and rents are low. There is a social hall for any purpose, also fields for tennis, basketball, and football. A general store supplies everything needed.

G. M. Crawford, with offices in the Bessemer Building, Pittsburgh, Pennsylvania, has been appointed agent for the McNally-Pittsburg Mfg. Corp., to cover sales in Pennsylvania and eastern Ohio.

John F. Maurice of Welch, West Virginia, has also entered the services of this company as special salesman for Norton Vertical Pick Breakers. Mr. Maurice was formerly connected with the American Coal Cleaning Corporation.

Mining Methods of the Coeur d'Alene Mining District

By CHARLES H. FOREMAN *

THE Coeur d'Alene Mining District, located in Shoshone County, in the Panhandle of Idaho, is known as one of the main producers of lead in the United States. The first lead mines were discovered in 1884. Silver has always been recovered as a by-product and in comparatively recent years, due to improvements in metallurgy, considerable zinc has been produced. During the last few years deep development in the district's so-called "Silver Belt" has disclosed the premier silver mine of the United States.

The orebodies of the district occur in rather severely sheared and/or faulted zones of Algonkain quartzites and slates and have been more or less disturbed by later faults. In general, the orebodies occur along pronounced shears accompanied by a substantial gouge. There is generally no definite line of demarcation between lode and country rock. This wide shear and the accompanying gouge causes extremely heavy side and top pressures.

It can be said that the mining of Coeur d'Alene ores requires a method which allows for extraction of ore from varying widths and at the same time holding the stopes against the extremely heavy top and side pressures.

The orebodies of the district may be divided into two general types:

The more or less regular orebody, rather steep in dip with maximum widths up to 40 ft. Mines of the Burke Canyon are typical of this condition.

The irregular type, with extreme widths and/or rather flat dips. The Bunker Hill mine is an example of this type of deposit.

Horizontal Stoping with Stull Sets and Fill

For the mining of more or less regular orebodies, with a rather steep dip (over 65°) and for moderate widths, the district has developed a mining method that might be called the Coeur d'Alene method. It has been termed "Horizontal (or Flat) Stoping with Stull Sets and Fill." Mines using this method at present include the Morning, Hecla, Sherman and Tamarack and the method is being developed by the Sunshine Mine for their use. The Standard-Mammoth and the Tiger-Poorman also used this method of mining.

One of the characteristics of the method is the placing of a horizontal stull, locally called a cap, from wall to wall of the stope, the stull being posted to the set below. Where the width of stope requires timbers of a greater length than is possible to hoist into the stope, two or more caps are butted end to end, posts being placed, if necessary, at the ends of each cap.

Mining is done by horizontal slicing, timbers being placed as the ore is removed. Chutes are placed at intervals of from 50 to 100 ft., depending upon the tonnage to be removed. Waste corrals are placed on top of the first floor cap, leaving one floor open between drift and corral bottom. Filling is introduced into a raise chute on the level above and is drawn off in the stope at the respective floors and trammed by cars to fill the mined-out sets as the stoping advances. This waste filling is contributed to by waste sorted from newly mined ore broken in stoping. Where no waste is available from other sources, it can be obtained from crosscuts or raises into the walls. Fill is kept as close as possible to the unbroken back and a workable distance from the advancing face.

When the stope has reached to within three floors of the level above, the remaining back is removed by a series of vertical underhand slices, starting from and advancing away from the raise. As these slices are removed, the waste fill is kept a working distance, generally 10 ft. from the advancing face.

In drifting, the full width of the ore is removed, up to a maximum of 18 ft., which allows a 16-ft. cap with the necessary heading boards. The floor upon which the corral bottom is placed is mined the full width of the ore. Ore remaining in the walls of the drift, below the corral bottom, is mined from the level below.

Square Sets

Where the orebodies are very irregular, have flat dips or have widths greater than 30 ft., the square-set method of mining is used. This is best exemplified at the Bunker Hill Mine where the major portion of their tonnage is mined by this method.

The main Bunker Hill orebody consists of wide, irregular masses of galena with siderite and quartz gangue. There is ordinarily one fairly well defined wall, but never two. The dip of the vein is between 40 and 50 degrees. The hanging wall is invariably heavy and the use of square-sets, closely filled with waste, is the only method by which it can be safely supported.

In opening a level a drift is first run on the footwall of the extremities of the orebody. When the ore widens so that it cannot be included in the drift, crosscuts are driven at intervals to the limit of the ore on the hanging wall side. Stoping is started on the hanging wall side of the vein. When the sill floor has been stoped about four sets wide, a new floor is started above the sill floor, the first row of square-sets extending into the hanging wall to obtain filling for the sill floor, after which stoping progresses toward the footwall. A steeply arched back is maintained at all times.

From the footwall drift, at about the center of the ore shoot, a raise is started on the footwall to the level above. This raise provides a waste and timber pass, with a manway between. Another drift is driven about 20 to 30 ft. under the footwall. Raises from this drift are extended to the stope and eventually become the main ore passes from the stope.

The hanging wall portion of the stope is advanced by mining nearly vertical slices, one or two sets wide. Additional floors are opened to keep a strong arch over the stoped area and a nearly vertical face is maintained. At this stage the footwall raise is connected by a row of square-sets with the top floor of the stope and waste is drawn from the raise and distributed into the stope by hand-trammed cars. The stope is worked so that the highest point is at the raise, thence sloping down to each end. This allows waste and timbers brought in

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through the raise to descend to the place where they are used.

This method provides ample support to the extremely heavy hanging wall and provides protection for the miners. It also provides vertical openings in the stope, giving better ventilation. The high sharp arch throws the weight of the ore on the footwall and the weight of the hanging wall upon the solidly filled square-sets. The arch is developed early in the operation and is carefully maintained until the stope is finished. The rock chutes in the footwall give greater storage capacity and require less repair than timbered chutes.

The orebodies of the Page Mine have widths up to 20 ft., but the flat dips, from 40 to 50 degrees, together with the badly broken and shattered walls, necessitate square-set mining with closely filled stopes. Main working chutes and raises are spaced 140 ft. apart. Ore passes are spaced 35 ft. apart and are cribbed.

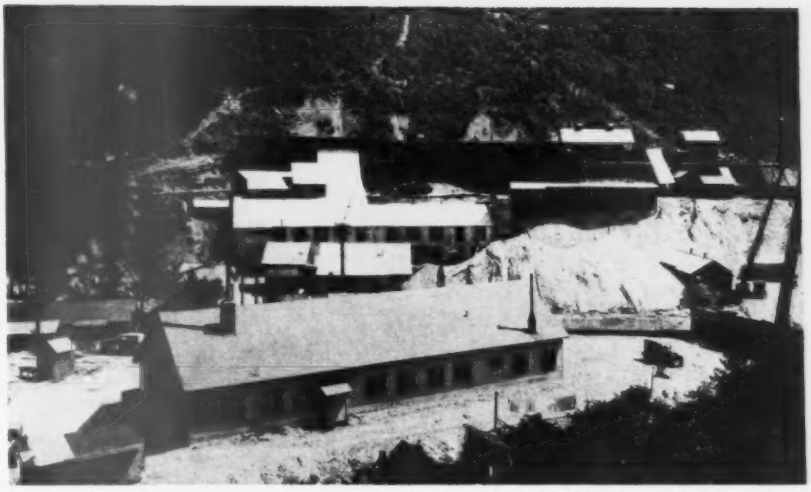
The Hercules mine, before its exhaustion, used the square-set method of mining, with closely filled sets.

Cut and Fill Method

A small percentage of orebodies in the Coeur d'Alene District have quartzite walls of sufficient firmness to permit mining without timbers.

The Bunker Hill mine uses the "Cut and Fill" method, with cribbed chutes and manways, in mining their Jersey type veins. The ore is blasted on plank floors covered with fine waste to prevent loss of valuable fines. The broken ore is shoveled into wheelbarrows and the coarse waste is sorted out for use in building up walls, behind which the finer waste material is thrown. Filling is done by blasting down rock from the hanging wall, or by running waste into the stope, through a raise, from the level above.

Hecla Mine Plant



Ordinarily, very little timber is needed, but when necessary the hanging wall is supported by stulls and headboards. If the stope is very wide, or if a section of soft ground is encountered, square-sets are used.

The Crescent mine uses the cut and fill method, keeping the fill within 3 ft. of the unbroken back.

The cut and fill method of mining is used in a very few stopes in the Hecla mine, where a supply of waste from other sources is not available, and where it is necessary to obtain the fill from the walls. Places of use are in the east orebody where the walls are of fairly firm quartzite. Chutes and manways are made with the regular stull sets, the fill being laced off.

The Interstate-Callahan mine, formerly one of the district's principal zinc producers, used the cut and fill method.

Shrinkage

A few mines have ground in which a shrinkage system can be used. The usual shrinkage method is employed, deviating only in that the stopes are started upon timbers rather than upon pillars of ore. This method is used, to a very small extent, in the Hecla mine.

Rill Method

The Rill method of stoping has been used in a few places in the Coeur d'Alenes but the method has been or is being replaced by other methods, generally the Coeur d'Alene method of stull sets. In only the Dayrock mine are the ground conditions suitable for this method. The fact that ore "makes" into the walls also reacts against the system. The Hecla mine tried the Rill system, both timbered and untimbered, in a few stopes that appeared suitable, but the method was discarded in favor of the stull set method. The Sunshine mine is also changing from the Rill method to the stull set method.

Sinking

There is nothing new to be said about the methods of shaft sinking in the Coeur d'Alene district. Shafts are either incline or vertical, depending upon the dip of the orebody and other conditions. Due to topographic conditions, the majority of the top stations are underground.

Raises

Many types of raises are to be found in the district. Raises in ore are timbered in the general method to be used in mining the orebody served by the raise.

Where the wall rocks are of a substantial quartzite, raises for the passage of ore and waste and raises for ventilation purposes are generally placed in the walls. These raises are driven by the "shrinkage" method, in which the walls in one end of the raise are used, while driving, for the passage of broken rock to the level below. When desired, the timbers in these raises are removed by slowly filling the raise with waste or ore, the timbermen working on top of this fill as the removal of the timbers progresses upward. This method provides timbers above the workmen at all times.

During recent years a working raise has been driven from the 4,000 level to the 1,200 level in the Star mine. This raise was driven in individual or separate "lifts" of from 200 to 600 ft. In driving a center compartment was timbered with temporary stull sets, while the two ends of the raise were used for the passage of broken waste to the chute in the completed raise below. When the desired height of "lift" had been reached, regular framed shaft timbers were placed on bearing timbers at the top of the raise, in exact alignment with the permanent shaft timbers below. The broken material was then drawn from the raise for a few sets, the temporary timbers were removed, and permanent timbers were suspended from the timbers above by hanging rods, and then securely blocked to the ground.

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"Can Our Power Costs Be Reduced?"

By PETER F. LOFTUS*

EVERY operator of a bituminous coal mining property is, or should be, directly interested in the subject of power costs, as it is one of vital importance to him in the interest of the successful physical and financial functioning of his enterprises.

The following interesting statistics, concerning the application and use of electrical energy in the bituminous mining industry in the United States, are available from the 1930 census for the year 1929.

Four thousand nine hundred seventy-six mining enterprises, operating 5,620 mines employing 458,732 wage earners, produced 534,988,593 net tons of bituminous coal having a value of $966,693,771. The utilization of electrical energy was 2,508,889,738 kw. h., of which 2,044,348,813 kw. h. were purchased electrical energy and 464,540,925 kw. h. were generated in private plants—in which plants were installed 973 electric generators having a total capacity of 271,072 kw. Sixty-six thousand five hundred eighty-one motors, rated at 2,402,500 hp., were supplied by purchased electrical energy, and 14,379 motors, rated at 429,970 hp., were supplied by electrical energy from private generating plants. The annual cost for the 2,044,348,813 kw. h. of purchased electrical energy was $30,739,381, reflecting a unit cost per kilowatt hour of 1.503 cents.

The succeeding tabulation sets forth the total and average power costs of 1,757 mines having annual productions ranging from 25,000 tons to 2,000,000 tons.

No. of mines	Annual production range in net tons	Connected hp.	Total annual power invoices	Avg. annual power invoices
431.....	25,000– 50,000	79,398	$1,131,279	$2,625
413.....	50,000– 100,000	160,080	2,398,996	5,808
399.....	100,000– 200,000	277,592	4,214,320	10,552
385.....	200,000– 500,000	482,791	7,030,102	18,260
114.....	500,000–1,000,000	305,009	3,699,184	32,450
15.....	1,000,000–2,000,000	94,565	857,775	57,185
1,757		1,399,435	$19,331,656	

Whether your enterprises are among those that purchase their electrical energy requirements, and have annual power costs in the order of $2,625 or in the order of $57,185, or whether you generate your electrical energy requirements, the fundamental and basic question, "Can our power costs be reduced?" cannot be answered either in the affirmative or negative unless you have a comprehensive and detailed knowledge of the electrical energy and demand requirements of the operating routines and schedules of your enterprise.

The larger mining enterprises maintain staffs of competent engineers and technicians to continuously study and analyze power costs in their relation to operating routines, schedules, and practices. These enterprises know where each kilowatt hour of energy and each kilowatt and kilovolt ampere of demand is utilized or lost; they know the efficiencies of equipment and routines; and can immediately answer in the affirmative or negative the question, "Can our power costs be reduced?"

No business can consistently continue on a profitable basis of operation without a detailed and comprehensive knowledge of the various items, routines, and practices entering into and influencing the total and unit costs of its products. In spite of this almost axiomatic principle, hundreds of bituminous mining enterprises cannot today answer the question, "Can our power costs be reduced?" for the reason that they do not have this comprehensive and detailed knowledge.

Many bituminous enterprises realize that they lack sufficient factual data concerning their power applications and costs, and that they do not know whether or not their power costs could be economically reduced. They hesitate, however, to authorize the expenditure necessary to secure comprehensive and detailed analyses of their power application and cost problems, as they have no assurance that such analyses would effect economies for them.

No one can forecast with exactness what results or economies could be accomplished by a comprehensive and detailed power cost analysis. In this article reference has been consistently made to "a comprehensive and detailed analysis." There is a definite reason for this constant reference to an analysis of this type, as experience has proved that such an analysis frequently points out the way to economies that could be effected not only in power costs but in labor, maintenance, and to economies resulting from increased production made possible by a proper rearrangement of operating routines and schedules.

At the convention of the American Mining Congress held in Cincinnati in May, 1934, a national power committee of the bituminous industry was appointed for the purpose of securing and disseminating data that would be of constructive value to the industry concerning the application, utilization, and cost of electrical energy. As chairman of that committee, I believe I am expressing the consensus of opinion of the committee in stating that at best this national power committee can accomplish only a general purpose; namely, the securing, correlating, analyzing, and compiling of general information for dissemination to the industry. No accomplishment of this committee would permit the executives of an individual mining enterprise to answer the question, "Can our power costs be reduced?" This answer cannot be determined without the detailed and comprehensive power cost analyses to which this article refers.

Let us at this point specifically outline the essential features of such an analysis, and of what practical value such an analysis would be. In brief, the essential features of such a detailed and comprehensive power cost analysis consist of a careful study of all the elements of power application and utilization which, when correlated and compiled with the present and potential operating routines and production schedules of the enterprise, constitute the electrical load pattern of the enterprise.

Specifically, such an analysis secures, studies, compiles, and correlates factual data of a most practical value concerning (a) the instantaneous and integrated kilowatt or kilovolt ampere demand, and the kilowatt hour utilization of each piece of equipment; (b) the function and the operating routines and conditions required of each piece of equipment; (c) the electrical and physical characteristics of all alternating current and direct current circuits; (d) the physical characteristics and requirements and the extent of ventilation circuits, drainage

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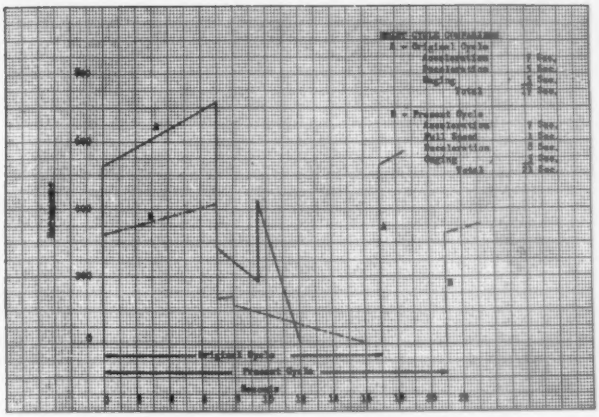

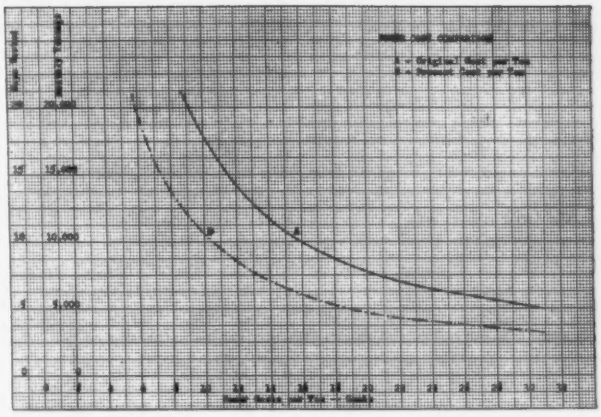

circuits, and transportation circuits; (e) all available records of maximum, minimum, and average productions, the number of working days, the number of idle days, the number of wage earners and location and extent of their duties, the cost of maintenance, and the cost of power.

Having secured the factual data outlined in the five preceding divisions, the first step in a comprehensive and detailed power cost analysis has been completed. The second and final step is to combine, correlate, and develop these factual data to determine the extent of the power, maintenance, labor, and operating economies that may be effected under the enterprise's present production schedules, and under any revisions of these production schedules.

In order to lend encouragement to those bituminous enterprises which hesitate to make expenditures for services that would enable them to factually answer the question, "Can our power costs be reduced?" there are set forth in the succeeding paragraphs a few of the accomplishments that have resulted from detailed and comprehensive power cost analyses.

First: A Proper Hoist Cycle Resulted in an Annual Power Economy of $3,000

As a result of a detailed and comprehensive power cost analysis at a shaft mine, it was established that the hoist cycle had been designed on the basis of a maximum mine production greatly in excess of the maximum potential production that could be transported to the shaft bottom or that could be properly prepared on the tipple.

The installation of a lesser diameter motor pinion, and the proper placing of the hoisting rope on the conical drums, established a slightly lower hoisting cycle permitting a maximum mine production and yet effecting an annual power cost economy in hoist operation in excess of $3,000.

The power cost economies effected during the first two months of operating the hoist at the recommended slower cycle were sufficient to offset the total capital expenditures necessary for changing the hoist cycle.

The preceding graphs set forth a comparison of the original and present cycles of hoist operation.

Second: Repairs to the Lining of a Return Air Shaft Increased the Air Delivery at the Bottom of the Mine Air Shaft and Concomitantly Resulted in an Annual Power Cost Economy of Approximately $4,600.

As a result of a detailed and comprehensive power cost analysis at a shaft mine, it was established that the lining of the return air shaft to the fan was defective, and that a large volume of air filtered into the return air shaft from the adjoining supply hoist compartment that constituted one of the four intake air courses to the mine.

Correction of this defective condition was accomplished with a capital expenditure of less than $2,500, and resulted in an annual power cost economy of approximately $4,600.

The succeeding tabulation sets forth the conditions before and after repairs were made to the lining of the return air shaft:

Item	Before	After
Volts (average)	474.00	479.50
Amperes	235.60	165.15
Power factor	82.46	75.98
Kws. (input)	160.32	103.62
R. p. m. motor	570.70	580.00
R. p. m. fan	116.70	119.08
Input to motor, hp.	214.90	138.90
Motor efficiency	89.00	90.20
Output of motor, hp.	191.26	125.28
Percent of motor rating	127.50	83.50
Belt efficiency	90.00	90.00
Input to fan, hp.	172.14	112.76
Water gauge in. at fan	3.01	2.86
Water gauge in. at shaft bottom	2.56	2.66
Total c. f. m. at shaft bottom	118,611.00	130,126.00
Hp. in air	56.26	58.54

Third: A Power Cost Analysis Accomplished an Annual Power Cost Economy of Approximately $7,100, *and an Annual Labor Cost Economy of Approximately* $2,600.

A drift mine having a maximum daily production of 1,000 tons had, over a period of years, been leased to various operators. After a period of idleness, the new lessee authorized a detailed and comprehensive power cost analysis. The wisdom of his decision is best evidenced by the fact that improvements necessitating a capital expenditure of less than $1,500 resulted in annual power cost economies of approximately $7,100 and additional annual labor cost economies of approximately $2,600.

The succeeding graphical illustration sets forth a comparison of the original power costs per ton and of the present power costs per ton for various days of mine operation.

The curves presented in the graphical illustration portray what even a comparatively small mining enterprise can accomplish when the determination is reached to factually answer the question, "Can our power costs be reduced?"

Mining Methods of the Coeur d'Alene

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All waste from this raise was removed through a wooden chute in one end of the permanent raise. Draw chutes were placed at 100-ft. intervals in the chute to break the fall of the broken rock. After completion of the raise, it was necessary to remove this chute and repair and align many of the permanent timbers. This was quite an extensive undertaking. It is quite probable that a better and not more expensive raise would have resulted if a small auxiliary rock raise had been driven near this main raise to facilitate removal of broken material. This temporary raise could, at some future period, have been used for the passage of ore or waste, or for ventilation.

Drifts and Crosscuts

Drifts and crosscuts vary in dimensions from 4 ft. 6 in. by 7 ft. to 8 ft. by 8 ft., depending upon the use. Main haulage and ventilation drifts are driven of the larger size.

Methods of mining in the Coeur d'Alene district have been greatly influenced by an adequate timber supply in the near-by forests.

POWER and Mine Transportation

By WALTER C. SHUNK*

THE seven-hour shift has brought about a severe test for mine transportation. It is possible that operating cost at many mines has increased out of proportion to wage increases because of haulage equipment being heavily overtaxed in an endeavor to haul as much coal in 7 hours as was formerly done over a transportation shift of 10 to 12 hours. In such cases, the transportation shift has, therefore, been reduced at least 30 and in some cases as much as 40 percent.

Although ample haulage equipment and facilities have been regarded generally as being highly essential to economical production, it is quite possible that many operations have not yet made adequate correction for the haulage over-saturation brought about by the shorter shift.

Power as applied for transportation purposes—when considering the actual work done—is a relatively cheap commodity for mining. The average mines producing 1,000 to 4,000 tons per shift—including gaseous and non-gaseous, wet and comparatively dry, level, and with extreme adverse haulage grades—use as much energy for ventilation or for drainage as is consumed for actual transportation. Explosives for coal and rock shooting is close to and in some mines somewhat in excess of the cost of energy for transportation. With such comparisons in mind, obviously, with wasteful practices taken care of, it is usually uneconomical to limit the use of energy for haulage purposes beyond a good practical degree.

No matter for what reason, power outages and consequent delays must be almost wholly eliminated for present-day transportation. Demand limiting should be carefully scrutinized because of the attendant stoppages and delays to trip movements. An unbiased check upon the effect of demand limiting from an economical and practical operating standpoint in most if not practically all cases, will probably reveal that apparent savings set up by limiting are adversely reflected in the various classified labor cost items. Actual surveys have developed instances of severe limiting where the resultant demand charge saving was lost at a ratio of 18 to 1, accounted for in the lowering of general labor efficiency, equipment operating time losses, and curtailment of production. Loss ratios ranging between 5 and 10 to 1 are common in thus limiting transportation.

Equipment in connection with the latter is predominant in establishing the power demand; the total labor cost is more susceptible to transportation in upward and downward trends than is the case with any other operating phase of mining. To realize a worth-while monthly saving by demand limiting requires from 5 to 10 percent cessation of power at intervals over the shift or month. Therefore, with well-regulated haulage, the matter of demand limiting resolves itself into a comparison of the saving effected thereby, with a figure of 5 to 10 percent of the total monthly labor pay roll.

From such comparison and without losing sight of the present limited shift period, it should be noted that with the relatively low cost of electrical energy as against labor efficiency and man power together with the importance of regularity and continuity of transportation; it is obvious that under present conditions the tendency in mine transportation progress will, in all probability, be toward higher speed movement of trips on main haulages and the liberal application of power thereto. This, presumably, will apply more to mines having gradients either in favor of or against the loaded trip. In the former it will be desirable to return the empty trips at greater speeds and in the latter the loaded trips over shorter time periods from the gathering to the dumping point. With locomotive and car equipment maintained in good operating condition

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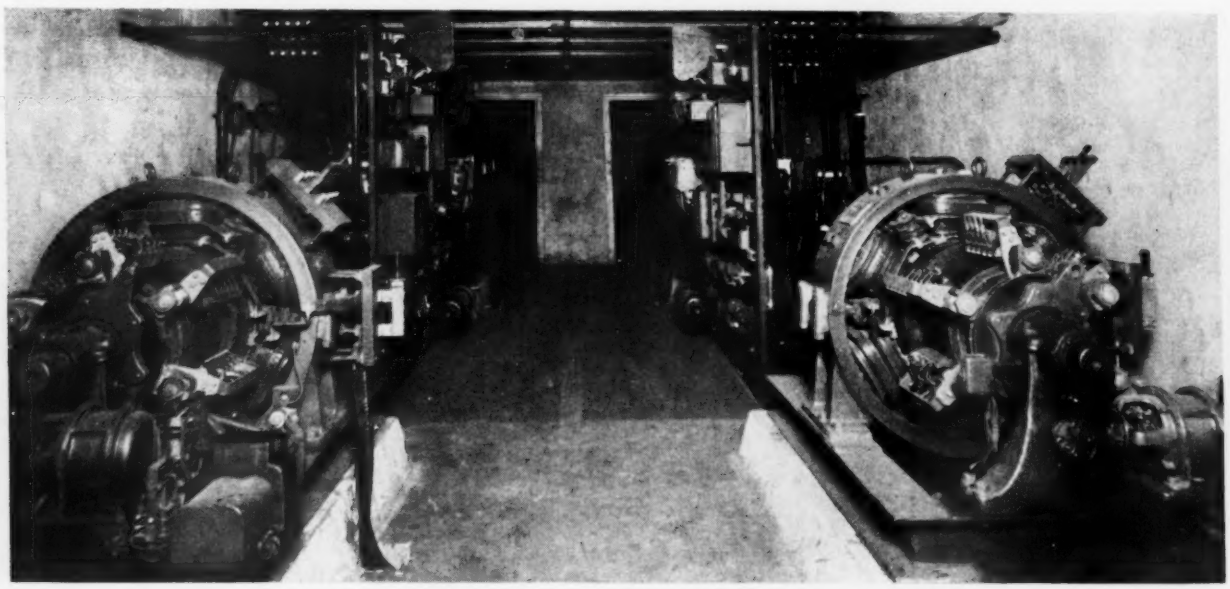

and with smooth-running wheel treads—with class "A" track and proper clearance, speeds of 12 to 15 m.p.h., would not be excessive from a power requirement standpoint nor hazardous from the safety viewpoint.

Mines operating on adverse grades of 2 to 4 percent have most to gain in this respect. A number of such operations now equipped with locomotive speeds of 6 to 8 m.p.h. at rated load, are actually operating over distances of one to two miles and more at speeds not in excess of 4 to 6 m.p.h., because of overload or low voltage, or both. To the interested reader a simple calculation of the time saving to be realized over a two-mile haul by increasing the latter mentioned speeds to 10 or 12 m.p.h. will, no doubt, be more or less astounding when reduced to the figures representing a year's operation and the equivalent thereof in seven-hour shifts gained.

Many operating men today are of the opinion that large tracts of coal with the seam inclination in favor of loaded transportation, can be economically mined with lighter weight equipment than would be used on a similar grade against the loads. As a matter of fact, for safe and low cost haulage in a fairly large mine with long grades, regardless of whether the loaded trip is ascending or descending a given grade, the weight of the locomotive should be the same for like trailing load trips. The weight of the locomotive on its wheels represents its adhesion, tractive effort and pulling power, likewise its braking power. It is evident that on a given grade as much adhesion is necessary at the locomotive wheels for retarding a trailing load as would be required to move the same load on a similar up-grade; consequently, the heavier locomotive not only serves as a safer and more effective braking medium in controlling trips on long descending grades, but also possesses added power which can be utilized to great advantage for increasing speed of the return empty trips on the ascending grades. This time saving is also exceedingly important when considered for the period of a year. Experience has indicated that mine car brakes cannot be depended upon for trip braking and safe control on long hauls—skids are troublesome to handle requiring time and man-effort to apply—sprags are not economical because of resultant wheel flats.

In connection with haulage another thought which is perhaps more or less exaggerated on the part of some operating men, is the difference in power requirements and cost thereof for operation on adverse grades as against grades favoring the loads. Calculations and actual tests indicate that the spread between such costs rarely exceed $0.015 to $0.020 per ton on average grades of 3 percent. The difference in transportation power cost on adverse grades of 1 percent and 3 percent should not exceed $0.010 per ton. In the figures quoted reference is made only to power cost; however, in most mines operating on 3 percent grades against loads, the variation in "total haulage" cost is proportionately higher than would be the case on grades of 1 percent. Usually the latter cost is proportionately high for the reason that suitable and trouble-free equipment has not been specified and used.

In addition to power as noted, and for the higher cost in connection with the heavier grade, only the higher investment charges for the heavier power and haulage equipment would be applicable. Unusually high transportation cost for operation on 2 to 4 percent adverse grades can invariably be attributed to light-weight locomotive equipment; lack of application of sufficient power; slow movement of trips; poor haulage regulation; severe grade undulations; bad track; run-down condition of mine-car equipment; especially the running gear and coupling parts, and many other items of less importance. Except for a few unmentioned matters of little consequence, transportation on the grades mentioned should not, other than as pointed out, seriously handicap operations with natural adverse haulage conditions as outlined.

With the shorter shift now in vogue the matter of delays has become increasingly significant, applying to the transportation system as a whole. It may be advisable to see that tipple capacity and dumping is arranged for a reasonably good margin ahead of scheduled trip movements. Any lost time due to power and substation equipment certainly will justify the expense for correction. With power and haulage regulation properly coordinated for production, there should be only slight delay resulting from power interruptions. Derailments from whatever cause will sooner or later be reduced to the absolute minimum—this constituting one of the major causes of retarding production and should not be regarded as a necessary evil. Ninety percent of all mine derailments can be eliminated on a "self paying" basis many times over, annually. A check on this particular delay item, especially in connection with gathering haulage, may reveal to the average management a surprising figure in lost time per locomotive shift.

Another point of delay at some mines is at the gathering sidetrack, caused by locomotive and trip interference. Too many gatherers working to one point with self interference and delay to relay or main haulage units. Proper projection and provisions for additional sidetracks together with arranging for a minimum of sidetrack maneuvering will greatly help trip movements at these points. On long, single-track haulage, employing three or more main line units with several passing points, there is

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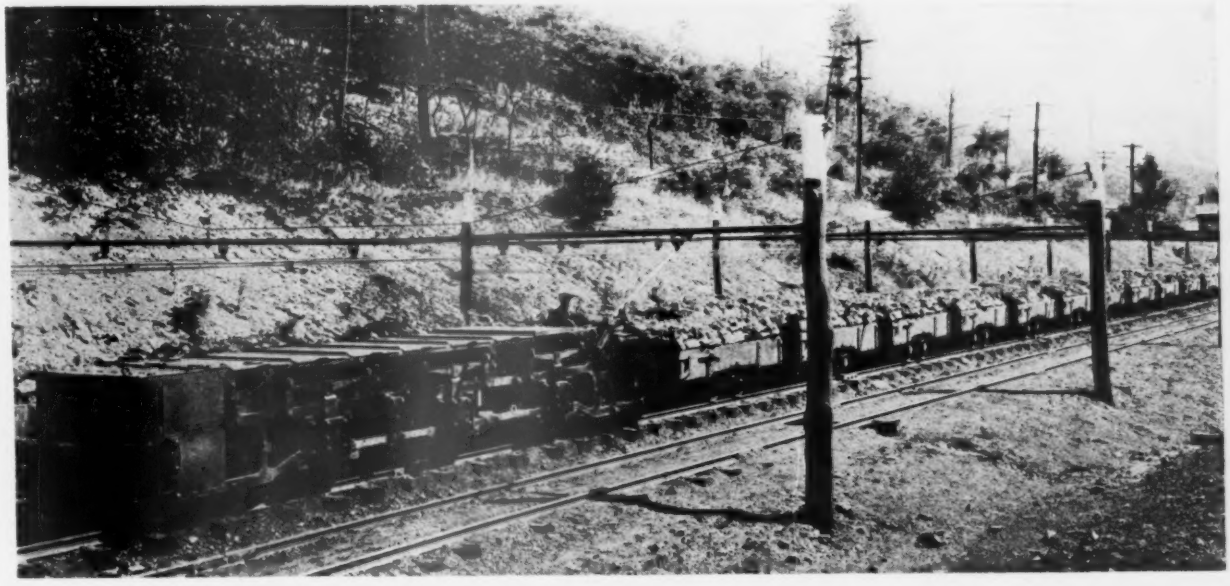


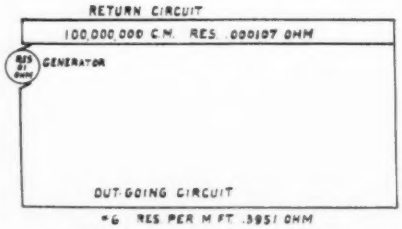
The Other Half of the Ventilation Question

By **J. F. MacWILLIAMS** *

THE formulae regarding fan performance, as generally understood, apply only if the fan is speeded up, and no other change made in any part of the ventilating system. Pressure varying as the velocity squared, and horsepower as the velocity cubed. If changes are made to reduce friction in any part of the ventilating system; chimney, inlet, casing or mine air-way, the water gage will drop in the section improved, and increase in the parts un-improved. This is presuming the fan wheel is rotated at constant speed. Like a shunt-wound electric generator, the pressure is the same at no load, or full load, minus the loss in pressure due to the flow in the generator itself.

If it were possible to overload the generator without burning it out, a point may be reached where it would take as great, or greater pressure to cause current to flow through the generator than through the conductors connected. Similarly, the fan may be overloaded to the point where the water gage across the fan is greater than the water gage of the mine, and this is the cause in many cases of fan inefficiency. It should be distinctly understood that the comparison is made between a shunt-wound generator, and a fan, as any other type of generator is not comparable. The fan also has a positive and negative, in the case of the blow fan, the negative pressure brings the air into the fan; the positive pressure forces the air through the discharge side of the fan, through the mine, to the outside atmosphere. In the case of the exhaust fan, the negative pressure, or depression, brings the air through the mine, through the inlets to the inside of the wheel; the positive pushes the air out into the atmosphere. If the generator had a high resistance lead in either the positive or negative line, the generator could not be efficient. If the inlet, or negative lead, of the fan is restricted, or obstructed or the chimney improperly designed, so that the air is discharged into the atmosphere at a high velocity, the fan cannot be efficient.

The following sketches and calculations will apply to air circuits, as well as electrical. The return circuit of the ventilating circuit is of infinite area, and we



Similar Electrical System

have replaced this in the electrical circuit with a 100,000,000 C.M. copper conductor. First, we will take the outgoing circuit as No. 6, representing the mine resistance, .3951 ohm. The generator is revolving at constant speed, producing 100 volts pressure. The total current flowing will be $100 \div (.000107 + .3951 + .01) = 246.7$ amp., and the drop across the circuit representing the mine will be 97.47 volts, and the drop across the generator, representing the fan will be 2.467 volts.

We will now replace the No. 6 with No. 0. We then have $100 \div (.0987 + .01 + .000107) = 922.7$ amp. The drop across circuit representing the mine will be 90.67 volts, and the drop across the generator, representing the fan, will be 9.227 volts.

Again, replacing the No. 6 with 500,000 C.M., we have $100 \div (.0216 + .01 + .000107) = 3154$ amp. The drop across the mine circuit becomes 68.12 volts, and the drop across the generator, representing the fan, will be 31.54 volts.

This also shows that any reduction in the internal resistance of the air, or electrical, pressure generator will be followed by an increased flow of current, as there is more pressure available to overcome the resistance of the rest of the system. Knowing the coefficients of friction, similar calculations be made of the ventilating system.

For calculation of the manometric efficiency of the fan the formula for the theoretical pressure should be:

$$P = \frac{W \times V}{32.2 \times 5.2}$$

when P = theoretical fan pressure in inches of water gage.
W = weight of air in pounds per cubic foot.
V = feet per second velocity of fan circumference.

Example—

Given: Temperature 65°.
Barometer 29°.
Fan diameter 18 ft.
Fan speed 300 r.p.m. = 5 r.p.s.

Then, W (weight of air) $= \frac{1.325 \times 29}{459 + 65}$

$= .073$ lb. per cu. ft.

And V (velocity) $= 18 \times 5 = 90$ ft. per sec.

Substituting in formula

$P = \frac{.073 \times (90)^2}{32.2 \times 5.2} = 3.5$ in. Theoretical water gage developed by fan.

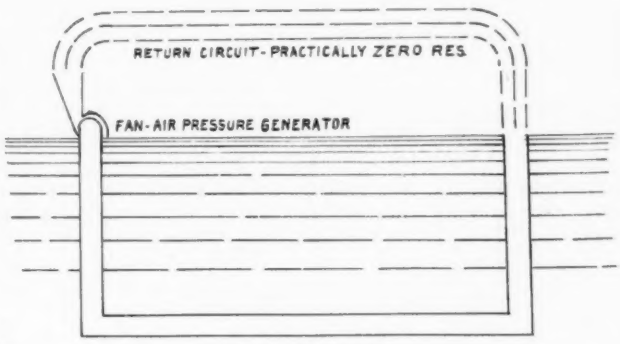
If the fan produces 3 in., the manometric efficiency is 85.7 percent measurement to be taken inside wheel. If we should show weight of air handled in 24 hours, and compare this with the weight of the coal extracted during a similar period, we would soon see the importance of our air pressure generator efficiency.

Then for the equivalent orifice of the mine:

A = Area in square feet.

$$A = .0032Q\sqrt{\frac{W}{P}}$$

(*Concluded on page* 92)



Ventilating System

* Electrical Engineer, Pennsylvania Coal & Coke Corporation.

Methods of Surface Waste Disposal

By T. A. STROUP*

COAL MINES invariably produce some waste material that must be brought outside the mine and disposed of. This waste is an important item of cost at most mines and deserves careful study, both as to inside handling methods, haulage, and final disposal on the surface.

Waste material may consist of slate, bone rash, or stone and may originate from the cleaning of the coal at the face, the systematic removal of slate or bone bands in the operation of mining, or the taking of top or bottom in the headings or rooms or both. Waste from these sources will be rather constant in amount, and it will appear on the side tracks with regularity, and the haulage and disposal arrangements can be laid out to handle it in the ordinary routine.

Waste again may originate from falls of roof which it is necessary to load out and from the cleaning up of airways and old haulways for various reasons. Waste from this source will be extremely variable in amount and will appear for disposal in an irregular manner and at times will tax the capacity of even the most elaborate disposal plant.

Except in those cases where the coal and waste can be dumped in coupled trips with gate arrangements for bypassing the slate, it is necessary to either bunch the waste cars on the inside into trips or to switch them out of the trips before they reach the dump or the shaft bottom; and it is the usual practice to switch them out. This part of the haulage layout should be thoroughly studied, as it is a prolific source of delays and inefficiency especially in mines that produce much waste in the routine operations of mining and brushing.

In some layouts the mine cars loaded with waste are tied up for long periods, which reduces the total turnover of the cars, resulting either in a reduced output of coal or an investment in more cars. In either case the costs are adversely affected.

The usual mine waste will weigh considerably more than coal, so the tendency is to overload the mine cars. This tendency is extremely difficult to combat, and the net result at most operations is increased maintenance and reduced life for the mine cars. In cases where there is much waste to be handled, the mine cars should be designed for the increased stresses due to the heavier material.

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The final disposal of waste on the surface is a problem that must be worked out for each mine. The size and shape of the disposal area should be carefully mapped, and the amount of material that it will hold should be calculated. This procedure will of course be different in level country to that in the mountainous sections. The following methods of disposal are those which have been applied at the mines of the West Virginia Coal & Coke Corporation, all of which are drift or slope mines, located in mountainous country.

Unloading by hand from tracks along the hillside is used only for emergency and temporary disposal or for filling in small depressions for building or other purposes. This method is relatively costly. With end gate cars one man can handle about 20 tons per shift of ordinary waste, with closed end cars this is very much reduced. This system of disposal is the worst of all from the standpoint of keeping cars out of service.

Another method that is much used is an ordinary horn dump set on a timber trestle. This method usually requires a locomotive, but it is economical from the standpoint of labor. It is, however, open to two serious objections; namely, the cost and delay incident to extending the trestle and moving the dump, and the inefficient utilization of the disposal area. Unless waste is unloaded by hand to the level of the trestle, the loss of dumping space may be very serious. Sometimes these dumps are combined with conveyors to stack the waste, and such systems are efficient within their rather limited range.

Recently a hillside type of dump capable of handling either closed end or end gate type of cars has been developed. These are self contained machines made to rest on the track and movable along same by means of a locomotive. The cars are pushed into the cradle of the machine over approach rails. The cradle and car are then turned over by a motorized mechanism and the waste dumped down the hillside. In operation the track is gradually moved out over the fill, and the disposal space is fully utilized. Two men and one locomotive can operate the machine, which will dump as many as 25 cars per hour. Moving costs are low, and the device has proven very satisfactory for hillside dumping where considerable height is available.

The use of larry cars, either motorized or handled by a locomotive, is a time-honored method of disposing of mine waste. For large capacities or long hauls larries are economical and flexible. Grades up to 8 percent are usual in such layouts, and the trackwork necessary to fill large areas is not burdensome. Larries in actual use range in capacity from 1 yd. to 20 yds., and they are made either side dump, end dump, or revolving to dump in any position. Larries are almost invariably operated by one man, but additional labor for dumping the mine cars into the bin is usually necessary. In designing a plant, the location and construction of the larry bin deserves careful consideration. The dumping of the mine cars is usually over a horn dump or a kick-back dump for end gate cars or a gravity rotary dump for solid end cars. The slopes of the bin bottom toward the gates should be amply steep, and attention must be paid to the valley angles; for if these are too flat, the entire mass tends to stick in the bin. The gates should be of ample size for the material to be handled and should be of a type that opens and closes easily. For very large gates that are frequently operated, motorizing should be considered.

Where conditions warrant, the use of aerial tramways is a very practical way to dispose of mine waste. The conditions under which they are economical include the presence near the tipple or portal of a large depression or valley with steep sides, or so located that high towers can be used for securing the necessary depth under the ropes. The amount of slate to be disposed of must justify the first cost, which is quite large.

Wire rope tramways are of several types. The single rope single bucket type is suitable only for small capacities. The two-bucket type is suitable for capacities up to 40 cu. yds. per hour at a dumping distance of 2,000 ft. from the loading terminal. They are also more economical of power than the single rope systems. The highly developed continuous bucket systems are suitable for long distances and large capacities. They are high in first cost, but efficient in operation. The "Lawson" tramway consists of buckets traveling on a pair of track cables. They are continuous in operation and usually discharge over the end

(*Concluded on page* 104)

Power and Mine Transportation

(*Continued from page* 89)

likely to be found a total waiting time ranging from one-half to the equivalent of one locomotive shift. If the trip movement is continuous (except for passing) over a distance of two to three miles, it may be found advantageous in cutting delays to resort to the relay method of transportation, at the same time considerably reducing high temperature operation of the motor equipment if trouble of that nature is experienced. Even with double-track operation on long hauls, locomotive equipment will withstand reasonable overloads in relay service where the load duration period does not exceed 15 minutes—this being an emergency expedient, of course. Numerous delays of miscellaneous nature, which space will not permit mentioning, deserve much consideration for consistent transportation.

In the selection of main haulage equipment, and commenting generally, it would be well for mining concerns to use more care and be more liberal in locomotive weight specifications for given duties than has been practiced in the past. It is, perhaps, conservative to state that 9 out of 10 purchases have been made which ultimately, for dependable and low cost operation, have been subjected to duties from 25 to 100 percent above the normal load rating. As a result, the industry has expended more money for locomotive burn-out replacements than for any other item of transportation maintenance, not to mention production losses. Of course, most of this has occurred where haulage has not been adequately systematized. Original specifications are responsible for many locomotives having been furnished underweight and under-powered, although the majority are inadvertently subjected to excess duties by personnel not familiar with equipment load characteristics.

In a surprisingly high percentage of instances the weight specifications ot main haulage locomotives are inadequate to the extent that fairly heavy continuous sanding is required for movement of the specified trailing loads. It is readily understandable and obvious that rolling friction of the trips is increased with the degree of heavier sanding—wheel tread wear on both locomotives and cars is proportionately increased, as is power consumption. In all such instances the power to be saved in car rolling friction as between plain and anti-friction bearings is offset from one to three times over by excess sand adhering to the wheel treads of the trailing load. From this aspect we would take it that intimately it would be economy and preferable to have the combination of the heavier locomotive with plain bearing equipped cars, than the lighter one, with anti-friction bearings applied to the car equipment. This manner of illustration is not meant to distract from the wise application and the superiority of anti-friction bearings over those of the plain type; but expressly for the purpose of indicating the very possible fallacy of endeavoring to establish practical and economical transportation with underweight locomotive equipment involved.

Another factor of importance is the development of trip regulation and continuity of movement to the highest possible degree. It is well to set an objective and gradually improve upon schedules until movements are kept slightly ahead of the manual or mechanical loader's ability to produce. With the average haulage situation prevailing it is almost invariably found in following the details of such procedure for improvement, that an appreciable production gain per man-day involving all labor is brought about. It is inevitable that the transportation phase of production be foremost in alertness if it is expected to effect and maintain the necessary organization morale for ultimate results in production.

With continuation of the short shift a matter of reflection affecting transportation is the selection of car equipment, particularly with regard to capacity. In recent years the trend has been toward the largest possible cubical content commensurate with seam thickness and other considerations—even to the extent of extreme length for hand loading, requiring double handling of one-fourth to one-third of the car capacity, thus seriously affecting the tons per loader per shift. Of the modern designed cars and in seams up to 5 ft. in thickness, not more than three of the large cars are required per loader shift; this resulting in reducing the car turn-over per shift. It would seem that with the comparatively shorter working day the matter of maximum tons per loader shift will be given further consideration for improvement and together therewith it is perhaps likely that for hand loading the longer cars requiring extra effort in loading will be reduced in length and capacity for convenient loading and quicker turn-over from the tipple to the face and return.

It is not suggested that drastic reduction in car size may take place, but rather only sufficient for the requirement of about four cars per loader shift, thus providing more regular and consistent transportation throughout the shift and an earlier movement of the first and last cars from each working place to the dumping point. In this respect it is anticipated that car movement over the entire haulage will be developed as nearly as is possible to the analogy of complete conveyor transportation—getting to the tipple as early as is consistent, the first and last mined coal of the shift. Such regulation of transportation promotes not only a higher degree of operating economy, but provides the only practicable and effective weapon for control of the power demand.

The Other Half of the Ventilation Question

(*Continued from page* 90)

To measure the water gage of the mine, place tube at the junction of drift, or shaft, and the fan housing. Again, behind the smallest diameter of the blades. The difference is the loss in the inlet of the fan. Next, measure the average velocity of the air flowing from the stack, and from this, the formula, $\left(\frac{V}{4015}\right)^2$ will give the positive pressure necessary to discharge the air into the atmosphere. Adding the loss in the negative, or inlet, to the positive, or discharge, would permit us to calculate the equivalent orifice of the fan. The result would indicate whether we should work to improve the mine, or the fan. If loss is greater on the negative side, reduce obstructions which cause turbulence. If on the positive side, in case of extreme difference of velocity in sections of the chimney, try to produce uniform flow. Also work to obtain a uniform flow of 1,000 ft. per minute by increasing height of stack.

In tests of mine fan performance, the water gage should be taken at the junction of the fan and mine drift, so that all the fan losses are included, and not charged to the mine. This applies whether the enclosure was built by the fan manufacturer, or as his design.

The public utilities have probably advanced farther in efficient operation than any other business. Should it be advised that they should raise their voltage, or pressure, at the generator, and then insert resistance in near-by conductors to reduce this voltage in order to get a proper flow in far-away sections, they would ridicule the idea. It appears to me that due to the inefficiency of regulators, some approved method of installing boosters might be found, with a consequent improvement in efficiency at far less cost for operating power. It is stated that in case of an explosion, the booster might be destroyed, but what about the regulators? It appears to the writer that we have a long way to go in increasing the efficiency of ventilating our mines.

The Jones & Laughlin Steel Corporation recently announced that **George Gordon Crawford**, former president, "has severed his connection with the corporation to return to his home in Birmingham, Ala."

Mr. Crawford retired as president on May 31, last year, and was succeeded by S. E. Hackett, former vice president in charge of sales. He remained as a director and member of the executive committee.

MINING EVENTS

Coal

THE coal industry is still in the midst of its difficulties, with threatened legislation, both state and national, unsettled wage scale contracts, and controversies over freight differentials. Although the report of the Senate Interstate Commerce Committee on the Guffey bill has been submitted, there is little possibility of the measure being called for speedy action. The bill, however, is on the calendar and could be brought out for floor consideration in the absence of other more important Administration legislation being ready for consideration.

The six-page report submitted by Senator Neely (W. Va.) goes into the bill's objectives and urges enactment. The possibility exists that consideration of the bill may be deferred pending final determination of the NRA extension measure, according to some Senators.

Senator Neely, in charge of the bill, has indicated a desire to bring up the bill shortly for action in the Senate. In this he has the important backing of Senator Wheeler, chairman of the I. C. C. Committee, who surprised even members of his own committee the past week in pushing the bus and truck regulation bill through for passage in the Senate. Proponents of the Guffey bill are confident of Senate approval. As yet the House Ways and Means Committee has not reported the measure in the lower chamber. Numerous other bills, more important from an Administration standpoint, are likely to have the right of way over the coal bill in the House.

The Senate, on April 10, voted 56 to 21 against consideration of the Black 30-hour bill. The vote was on the advisability of immediate action on the bill. Two Senators, McKellar (Tenn.) and Barkley (Ky.), both of whom voted against consideration, declared on the floor that they favored the bill but were opposed to consideration at this particular time. They added that they believed they expressed the opinion of other Senators. Administration Leader Robinson declared it was unwise to consider the bill now until after the NRA extension had been considered. House action on the measure is definitely put off until after Senate consideration.

Executive consideration by the Senate Education and Labor Committee is tentatively slated at an early date on the Wagner bill. It is not on the "hurry" list and leaders agree that it will not be brought up in the Senate for some time. Proponents of the measure remain confident of its passage. Senate leaders privately have declared that coincident with NRA extension, the need for some sort of a labor policy bill will probably force action. Best considered opinion is that if the Wagner bill is enacted, it will be considerably modified to fit in with the very modified NRA bill that is expected to be passed.

WAGE negotiations are practically at a standstill. The joint committee is meeting frequently, but is devoting its time to discussions of the problems involved in gathering statistics for use in arriving at satisfactory differentials between districts. The real purpose of the negotiations has been temporarily sidetracked, and many predict that no agreement can be reached on the all important matter of hours and wages prior to June 16. It is obvious that congressional uncertainty has slowed down negotiations, and that the proposed legislation may have an important effect upon hours and wages, and the future of the coal industry.

Negotiations started April 9 between eastern operators and union representatives looking toward a new wage agreement. The eastern group, comprising division 1 of the industry, embraces Ohio, Pennsylvania, Maryland, Virginia, West Virginia, Eastern Kentucky and Tennessee. When a new agreement has been concluded in this area, which produces about 70 percent of the bituminous coal and employs about that proportion of the miners in this industry, negotiations will get under way in the other divisions. The Alabama operators refused to negotiate an extension of the existing contract. These producers are seeking a return of the 8-hour day instead of the present 7-hour schedule. Basic wage in Alabama is $3.80 a day, which is the lowest being paid. Eastern union representatives are seeking an increase of 50 cents a day in wages, amounting to between 10 percent and 12 percent of present rates, and a proportionate increase for workers on a tonnage rate basis and for employes paid on a monthly rate. They also have indicated a demand for a 6-hour day, but this demand has not been emphasized. At present the industry is operating on a 7-hour day, five days a week.

WHAT DO YOU MAKE OF IT, MY DEAR WATSON?

—Washington Daily News

In Illinois the United Mine Workers have agreed to an extension in the basic pay rate of $5 a day until June 16 or to such interim period as may be required to conclude the Appalachian (eastern) agreement following which either operators or employes may terminate the extension. The Progressive Miners of America, the Illinois Coal Workers Union which is not affiliated with the American Federation of Labor and which has about 15,000 members out of a total of nearly 40,000 miners in the state, is negotiating a separate agreement with operators in the area dominated by them. The present basic rate is the same in this state for both unions. This group is seeking an increase of $1 a day in pay with a proportionate increase for tonnage rates and monthly rates and it also is striving for a 6-hour day. While negotiations nominally are in progress, a final agreement probably will not be concluded until the contract with the United Mine Workers is in final form. Further, the provisions of the new contract with this group probably will be very similar to that with the United Mine Workers, as has been the case heretofore.

The Indiana operators and workers also extended their present contract until June 16. The basic rate in that state is $4.58 a day.—*Wall St. Journal.*

THE AGREEMENT of miners and operators to extend the Code Provision to June 16 brought relief to both sides of the controversy. The following is the text of the National Industrial Recovery order, incorporating the amendment extending the present agreement to June 16:

"An application having been duly made pursuant to and in full compliance with the provisions of Title I of the National Industrial Recovery Act, approved June 16, 1933, for approval of an amendment to a code of fair competition for the bituminous coal industry and annexed report on said amendment, containing findings with respect thereto, having been made and directed to the President:

"Now, therefore, on behalf of the President of the United States, the National Industrial Recovery Board, pursuant to authority vested in it by executive orders of the President, including Executive Order No. 6543-A, Executive Order No. 6859 and Executive Order No. 6993, and otherwise, does hereby incorporate by reference said annexed report, and does find that said amendment and said code, as constituted after being so amended, complies in all respects with the pertinent provisions, and will promote the policy and the purposes of said title of said act, and does hereby order that said amendment be and is hereby approved, and that the previous approval

of said code is hereby amended to include approval of said code in its entirety as amended.

"Further ordered, that the order of this board hereinabove recited, be and hereby is made without prejudice to the board's consideration of an appropriate action upon any application for amendment to or modification of said code now pending in or with the National Recovery Administration, and subject to the power especially reserved in and by said board to order the amendment or modification of any provision of said code in conformity with any agreement affecting such provision which may be reached between employers and employes in said industry and presented to said board at any time between April 1, 1925, and June 16, 1935, both dates inclusive, for its consideration thereof and action thereon.

"NATIONAL INDUSTRIAL RECOVERY BOARD,

"(Signed) By DONALD R. RICHBERG,
"Acting Chairman."

AMENDMENT TO THE CODE OF FAIR COMPETITION FOR THE BITUMINOUS COAL INDUSTRY

Add a new sentence to, immediately to follow the present provision of, and to become a part of, Article XI to read as follows:

"This code and all the provisions thereof, despite any provisions to the contrary contained therein and especially, but without limitation to those provisions of Articles IV, VI and VII providing for a time limitation upon the effect of such provisions or any of them, which may provide that the effect of such provisions or any of them shall terminate prior to June 16, 1935, shall remain effective to and including June 16, 1935."

ESTIMATES of bituminous coal production in the United States for the week ended April 20 were approximately 6,150,000 net tons. Production for the corresponding week: 1934, 5,847,000 tons; 1933, 4,710,000 tons.

The report of the Bureau of Mines shows production of 3,853,000 tons for the week ended April 6, and 5,522,000 for the week ended April 13, 1935.

Production calendar year to April 20: 1935—127,306,000 tons; 1934—121,501,000 tons.

THE Interstate Commerce Commission declined to suspend the tariffs containing increases in the rates on coal and coke and denied the petition of the National Coal Association and others in this respect.

THE twenty-third annual short course in coal mining at School of Mines, West Virginia University, Beckley, W. Va., and Logan, W. Va., is announced to begin June 10 and end July 20, 1935.

THE TOTAL production of anthracite (which includes colliery fuel) for the week ending March 30, as estimated by the United States Bureau of Mines, Department of the Interior, Washington, D. C., amounted to 596,000 net tons. This is a decrease, as compared with production of the preceding week, of 145,000 net tons, or 19.6 percent. Production during the corresponding week in 1934 amounted to 1,026,000 tons.

Preliminary figures show that the total production of anthracite (including colliery fuel) for the month of March, 1935, amounted to 3,082,000 net tons, as compared with 4,505,000 tons during the preceding month of February, and 6,418,000 tons during the month of March, 1934.

Estimated Production of Anthracite (Net Tons)

	1935		1934	
	Week	Daily Average	Week	Daily Average
March 16	704,000	117,300	1,674,000	279,000
March 23	741,000	123,500	1,149,000	191,500
March 30	596,000	99,300	1,026,000	171,000
Cal. yr. to Mar. 30, 1935	13,504,000		Coal year, 1934-1935	52,168,000
Corresponding period, 1934	18,495,000		*Coal year, 1933-1934	55,399,000
Decrease 4,991,000 tons, or 27.0 percent.			Decrease 3,231,000 tons, or 5.8 percent.	

* Revised to include adjustments made during the coal year.

WALTER GORDON MERRITT, counsel for the Anthracite Institute, in presenting arguments in opposition to the Wagner Industrial Disputes Bill, pointed out that the bill required compulsory dealings with labor unions, where a majority of the employes requested it, regardless of the fact that the union in question might be wrongfully administered, or might be pledged to unlawful purposes and repudiation of contracts, and arbitration awards. He urged that any labor union, to enjoy the benefits of the bill, should be required to register with the National Labor Relations Board, and to agree to accept and observe a specified Code of Fair Practices for labor unions. This Code of Fair Practices should require secret ballot in elections, and strike votes, and a reliable system of accounting with accounts filed with the Labor Relations Board. The organization should be further pledged not to indulge in strikes for illegal purposes, or in violation of agreements, or arbitration awards, or strikes entered into without first making reasonable efforts to settle the issues by direct negotiation, and government mediation, or strikes to coerce government. He argued that the provision forbidding employers to coerce employes in the exercise of their rights should be extended to forbid any person, or organization, from such coercion, and he presented an amendment which liberalized the provisions of the bill affecting company unions. He also opposed the provisions of the bill which disenfranchised minority groups in collective bargaining, and urged that minorities should have a voice in all negotiations, in order to assure a full discussion of all viewpoints. The provisions in regard to arbitration, he contended, were satisfactory, except for the reservation in two parts of the bill which in effect provided that it would be lawful and proper for a labor organization to strike for the overthrow of an award reached under a voluntary arbitration agreement.

In closing, he expressed his distrust of the legislative attempt to regulate industrial relations through a centralized governmental agency, but said:

"I have approached the question of this legislation not in the spirit of unqualified opposition, but with the intention of pointing out the essential unfairness of the bill in its present form in matters which involve elementary principles of right and wrong. The bill should be amended in a number of particulars to meet procedural and constitutional difficulties, but, in addition to that, it is most urgent that Congress recognize the difference between legitimate unions and illegitimate unions, between collective action for social good, and collective action for social harm, and should only extend the applications of this bill, which applies statutory compulsion to the recognition of labor unions, by limiting the benefits of the bill to such labor unions as conform to the prevailing standards of right and wrong in labor union activities."

The right of coal operators to discharge employes for engaging in and aiding others in "bootleg" mining, was upheld in a decision last month by James A. Gorman, umpire of the Anthracite Conciliation Board. The decision was in the case of a miner discharged by the Alliance Coal Co., near Tamaqua, alleged to have helped a brother in bootlegging coal.

Umpire Gorman ruled that "The complainant has no standing before the board * * * if by reason of his participation in such an act of disloyalty to both the employer and fellow employes, he find himself out of work."

THE National Labor Relations Board has released its decision in the matter of arbitration between the Virginia Anthracite Coal Companies and the United Mine Workers of America. The board denies the union demand for a reduction in hours from eight to seven a day. It granted wage increases of 5 percent for day work and yardage rates, and an increase of 2 cents a ton on the mining

and loading rate. The increases are to be retroactive to April 1, 1934.

In reaching its conclusions the board comments to the effect that the reduction in hours from eight to seven per day would necessitate an increase of more than 14 percent in rates of pay in order to maintain earnings. The board concluded that the companies would be unable to continue operations if such an increase were granted. It was also of the opinion that when earnings are as low as they are in these mines, it is of primary importance to increase earnings rather than to increase leisure time.

Gold and Silver

SILVER is on the up and up, reaching its highest price since 1925, with further advances anticipated, and the possibility of $1.29 as a top United States Government price for newly mined silver.

Effects of the higher price for the metal are beginning to be seen in domestic commercial circles. Leading silver manufacturers have raised their prices on sterling silverware on an average of from 10 percent to 15 percent.

Press reports indicate an optimistic attitude on the part of western silver centers—one Associated Press dispatch saying, "Increased silver production was predicted today by many western silver men as a direct result of President Roosevelt's boost in the Treasury price for newly mined domestic ore.

"Other mining men felt, however, that still higher prices or at least assurance that the new price of 77.57 cents an ounce would not collapse, were necessary for a boom in mining operations.

"On the basis of the 1933 production of 33,000,000 ounces, the increase of more than 6 cents would bring an additional $1,980,000 to producers.

"Some Utah mining circles considered the new price as additional proof the Government plans to carry out provisions of the silver purchase act of 1934, which ultimately will bring the price to the statutory $1.29 an ounce.

" 'It looks like the price will continue upward to $1.29,' said A. G. McKenzie, secretary of the Utah Chapter American Mining Congress in Salt Lake City. 'Very likely mines which produce a large proportion of silver can increase production, but the larger companies which produce considerable lead and zinc cannot increase production without further demoralizing the already low price level of these metals.'

"Conservative mine operators in the Rocky Mountain district were hesitant about predicting any immediate excitement.

"More optimistic than most operators, John T. Joyce, Colorado mine commissioner, said, 'Colorado always was prosperous when silver got between 75 cents and $1.'

"Montana silver interests found the higher price highly welcome, but refused to become excited until they are given some assurance that the price will be maintained.

Louis Shattuck Cates, president of the Phelps Dodge Corp., large Arizona mining concern, predicted 'somewhat greater activity' in Arizona mining camps.

"Doubt that the new price would greatly affect activity in one large North Idaho mine was expressed by Stanly Easton, president of the Bunker Hill and Sullivan Mining and Concentrating Co., of Kellogg, Idaho."

LIZA CROSSING THE RIVER

—*The Washington Star*

THE Division of Mines, Department of Natural Resources, under the direction of Walter W. Bradley, State Mineralogist, announces release of a new report under title of "Mother Lode Gold Belt of California," being Bulletin No. 108 of the division.

In all of the important placer-gold producing districts of California in the 50's and 60's search was early begun to find the so-called "mother" vein or lode as the source from which the gold in the gravels had been derived by Nature's process of erosion. Success rewarded these searches in many places. One of the two most productive districts came to be known as the "Mother Lode Gold Belt," extending through the counties of El Dorado, Amador, Calaveras, Tuolumne and Mariposa. It is not a single vein or lode, but a zone or belt up to a mile wide for a distance of 120 miles from northwest to southeast, within which are separate and discontinuous veins of gold-bearing quartz.

This belt has been described and mapped in previous publications by both the California State Mining Bureau and the U. S. Geological Survey; and so great has been the demand and interest in these reports that none of them is any longer available for distribution and second-hand copies are at a premium. For this reason and to record recent developments this latest bulletin is presented, which is the result of some six years of records researching as well as field examinations by Mr. Clarence A. Logan, district mining engineer, in the Sacramento office of the Division of Mines. It is accompanied by geological and claim maps. It is particularly opportune at this time of renewed and expanding economic interest in gold mining in California and the West.

Bulletin No. 108 may be obtained from any of the offices of the Division of Mines, at San Francisco, Sacramento, Los Angeles, or Redding, at $1.75 per copy, plus 15 cents postage when mailed.

THE Bureau of Metal Statistics issues a preliminary report on world gold production in 1935, qualifying their figures as follows:

"In this report the accounting for some of the countries especially for the latest month, is preliminary and subject to revision which may be considerable. The Mexican returns which reach us late are difficult to estimate, owing to their irregularity, and the same is to be said in respect of Colombia.

Gold Production of the World, 1935
(In thousands of fine ounces)

	Jan.	Feb.	Jan.-Feb.
United States (a)...	246	220	466
Canada	249	230	479
Mexico	69	*58	127
Colombia	*27	*25	*52
Chile	*24	*23	*47
Other So. America..	42	40	82
British India (d)...	28	26	54
Japan (d)	*40	*35	*75
Queensland	7	* 8	15
Western Australia..	53	21	74
Other Australia.....	10	10	20
New Guinea.....	18	15	33
New Zealand.....	*11	*13	*24
South Africa.....	891	821	1,712
Belgian Congo.....	30	30	60
Rhodesia	58	55	113
Br. W. Africa (e)...	36	30	66
Russia (b).....	350	350	700
Elsewhere (c).....	135	135	270
Total	2,324	2,145	4,469

* Conjectural.

(a) Includes Philippines. (b) Chiefly Siberia; estimated at average rate of 1934. (c) Includes West Indies, Central America, Europe, and Asiatic and African lands not separately reported. (d) Principal mines only, but nearly complete. (e) Gold Coast Colony, Sierra Leone and Nigeria.

AN ARTICLE appearing in the January 29, 1935, issue of the "Ost-Express," states that in connection with the great increase in gold production in the Soviet Union, the Commissariat for Foreign Trade in Moscow proposes to place a number of orders for technical equipment for the gold industry in foreign countries. The first equipment under consideration are gold washing ma-

chines, in production of which the Soviet factories are having difficulty.

Gold production of Soviet Russia for 1934 is estimated at from 130,000 to 135,000 kilograms—no official figures have been published.

The Russian authorities intend this year sending abroad a commission for the purpose of studying the gold industry, according to the article. The United States is the first country the commission anticipates visiting, where they intend studying the latest technical improvements in the manufacture of machinery for the gold industry.

Copper

COPPER producers are being congratulated upon their recent agreement on production control, marketing methods, and trade practices. For the first time in the history of the copper industry a constructive 3-year program is advanced to stabilize markets and prices.

THE Copper Conference has agreed upon the following points:

Curtailment of 240,000 tons annually as of June 1, 1935;

Formation of statistical organization to avoid accumulation of excess stocks;

Cooperation from foreign producers not represented in the conference;

Uniform trade and competitive practice;

Freedom of action for producers within limitations of uniform practice;

Agreement to run until July 1, 1938, subject to certain contingencies.

THE following statement was issued March 30, by Cornelius F. Kelley, president of the Anaconda Copper Mining Company and chairman of the Copper Conference:

"The principal producers of copper outside of the United States have been in conference during the past three weeks considering the problems of the industry in connection with the production of metal from sources outside of the United States and its sale in foreign markets. The conference dealt exclusively with the foreign situation and did not consider production or sales within the United States from which market the participants are excluded by reason of the existing excise tax of four cents per pound of copper and which market is covered by the Presidential Order approving the Copper Code.

"Notwithstanding the demand in foreign markets has been in excess of previous requirements, foreign production during recent months has been at a rate which if continued would not only retard the liquidation of existing surplus stocks of copper but add thereto, resulting in a wholly unsatisfactory price level in foreign markets.

"Participating in the conference were representatives of foreign companies having an aggregate current production of approximately 750,000 tons of copper per year, or more than 75 percent of the total foreign primary production, exclusive of Russia and Japan which import copper from outside sources in addition to their respective productions.

"The most important questions considered were productive control, marketing methods and trade practices. Complete accord has been reached upon all subjects considered, i.e.:

"1. A curtailment amounting to 240,000 tons of copper per year from current production will be made effective by June 1st;

"2. An organization has been created to compile complete statistical information to the end that while an adequate supply of copper will be provided at all times, the accumulation of excess stocks will be avoided;

RELIEF ALL AROUND

—The Washington Post

"3. Cooperation in foreign markets of producers other than those who have actively participated in the conference has been assured.

"4. Uniform trade practices governing sales, deliveries and terms of payment will be adopted;

"5. Each producer reserves freedom of action within the above limitations. There will be no pooling of sales or fixing of prices, but an effort will be made to insure stable markets and avoid wide fluctuations in price;

"6. Subject to certain contingencies, the term of the accord is for a period terminating on July 1, 1938."

Copper Houses, Incorporated, a subsidiary of Kennecott Copper Corporation, recently announced that it is building a copper house for demonstration purposes in which many new methods of construction will be used.

The unusual feature of this house will be the use of copper for the outside walls in addition to the more general use of this metal for gutters, down-spouts, roofing, screening and heating and plumbing systems.

The following statement was issued by E. T. Stannard, president of Kennecott Copper Corporation:

"We are about to start the construction of a model copper house in Washington, D. C. We believe that houses of copper can be built at lower first cost than comparable houses of other materials which do not possess the permanency of copper. This relatively favorable first cost when added to low up-keep should prove very attractive to home builders.

"Practically all the exposed parts of the house will be of copper, including the outside walls, roof, leaders, gutters and down-spouts."

AT THE annual meeting of the Hecla Mining Company Fred Searls, Jr., was elected to the board and James McCarthy was reelected president. The members of the board as reelected are: in addition to Mr. McCarthy and L. E. Hanley, vice president, Clarence F. Kipp, George P. Mayer and Arthur J. Pellette of Milwaukee, and A. W. Witherspoon of Spokane. William G. Hanson of Milwaukee is succeeded by Mr. Searls.

Iron and Steel

WE QUOTE from a recent article presented by Skillings' Mining Review, on "Minnesota Leads in Iron Ore Conservation."

"Conservation finds high expression in the iron ore industry of Minnesota. During the season of 1934 there was a total of 15,967,819 tons of ore shipped from the state, and of this the beneficiated ore totaled 5,584,975 tons, or 35 percent. The average shipment of beneficiated iron ore from Minnesota for the 10 years ending with 1934 was 34.8 percent of the season's total. It is worth recalling that the beneficiation of ore in Minnesota first began 29 years ago, in 1906, when less was heard of conservation of natural resources. The iron ore industry should be given much credit for taking steps to prolong the production of ore in this state for generations beyond the passing of district shipping ores, though that time still be far in the future.

"Through the courtesy of John J. Craig, who is preparing the 1935 edition of the 'Mining Directory of Minnesota,' the accompanying tables are presented, showing the progress of beneficiation of iron ore in Minnesota from 1906 to 1934, inclusive, and detailed information of the past four years. Mr. Craig is assistant metallurgist of the Mines Experiment Station of the University of Minnesota.

"Perhaps as good an illustration to show the advance of beneficiation in the Minnesota iron ore industry is found in the fact that in 1916, when there were 46,189,617 tons of ore shipped from Minnesota's mines, the beneficiated ore totaled only 4,444,267 tons, or 9.6 percent, whereas the beneficiated ore shipped in 1934 totaled 5,584,975 tons out of a total shipment of 15,967,819 tons, or 35 percent. In 1929, the record year for iron ore shipments from Minnesota, the beneficiated ore had advanced 34 percent.

Total shipment was 47,478,167 tons, and the beneficiated total was 16,141,106 tons. The highest percentage of beneficiated ore for any one season, however, was in 1930, when 40.2 percent was recorded."

AMERICAN Iron and Steel Institute sets steel industry's four year losses at two hundred eighty-five millions; they point out:

"The steel industry incurred an aggregate loss of $25,500,000 in 1934, making a total loss over the past four years of $285,000,000, or more than $3 on each ton of steel ingots produced during the period.

"The drain on the industry's reserves, while continuing in 1934, was less severe than in the preceding years. Last year's loss compares with one of $77,000,000 in 1933, and $166,000,000 in 1932. The industry's deficit for 1931 is estimated to have been more than $17,000,000.

"These estimates are based on financial reports from 23 companies representing more than 89 percent of the ingot producing capacity of the entire industry.

"During 1934, a total of $457,843,000 was paid in wages and salaries to steel employes. Approximately $100,000,000 of this total resulted from the increases in hourly wage rates and from added employment instituted by the industry since the inauguration of the Steel Code.

"Dividend payments to the more than half a million men and women who have invested their savings in steel companies remained at low levels during 1934. Dividends on all classes of steel company stocks approximated $16,000,000 in 1934 —hardly more than one-half of 1 percent on stockholders' investment.

"For every ton of steel ingots produced during 1934, the steel industry paid out more than $18 in wages and salaries. Stockholders' dividends, however, amounted to only 60 cents per ton.

"Production of steel ingots during 1934 aggregated 25,263,569 gross tons compared with the production of 22,594,-079 gross tons in 1933 and 13,322,833 gross tons in 1932. Production for 1931 —25,192,715 gross tons—was slightly below the total for 1934.

"The composite average price of important iron and steel products during 1934 was only 11 percent over the average for 1932, the year when prices reached the low point of the depression. The average is now 32 percent below that for 1923, the post-war peak for steel prices."

SHIPMENTS OF BENEFICIATED IRON ORE FROM MINNESOTA AND THEIR PERCENTAGE OF TOTAL SHIPMENTS FROM MINNESOTA

Year	Total iron ore shipments from Minnesota in gross tons	Shipments of beneficiated ore* in gross tons			Per cent beneficiated ore of total ore shipments		
		Concentrated	Crushed and/or screened	Total beneficiated	Concentrated	Crushed and/or screened	Total beneficiated
1906.....	25,613,401	0	146,503	146,503	0.0	0.6	0.6
1907.....	29,171,420	2,816	102,977	112,793	0.03	0.4	0.4
1908.....	18,100,006	4,443	53,076	57,513	0.02	0.3	0.3
1909.....	29,286,876	43,485	74,862	118,347	0.1	0.3	0.4
1910.....	30,403,712	610,392	75,511	685,903	2.0	0.3	2.3
1911.....	23,336,127	1,978,337	92,276	2,070,613	8.5	0.4	8.9
1912.....	34,195,682	3,091,354	208,223	3,299,577	9.0	0.6	9.6
1913.....	36,339,962	2,249,257	191,012	2,440,269	6.2	0.5	6.7
1914.....	23,352,360	2,014,387	130,181	2,144,518	8.6	0.6	9.2
1915.....	32,618,653	2,968,617	195,008	3,163,625	9.1	0.6	9.7
1916.....	46,189,617	4,234,710	209,557	4,444,267	9.2	0.4	9.6
1917.....	45,393,882	4,513,824	564,837	5,078,661	9.9	1.3	11.2
1918.....	44,070,710	4,915,488	562,146	5,477,634	11.1	1.3	12.4
1919.....	34,791,866	4,578,395	658,356	5,236,751	13.2	1.9	15.1
1920.....	40,348,663	5,003,468	818,652	5,852,120	12.5	2.0	14.5
1921.....	17,708,789	3,060,881	182,980	3,243,861	17.3	1.0	18.3
1922.....	30,772,162	5,016,782	770,727	5,787,509	16.3	2.5	18.8
1923.....	45,305,647	7,612,458	1,300,988	8,913,446	16.8	2.9	19.7
1924.....	31,589,464	5,331,284	2,434,408	7,765,692	16.9	7.7	24.6
1925.....	38,841,968	6,567,133	7,144,178	13,711,311	16.9	18.4	35.3
1926.....	41,919,575	5,557,875	9,663,354	15,221,229	13.3	23.0	36.3
1927.....	36,504,854	5,053,734	8,537,847	13,591,081	13.8	23.4	37.2
1928.....	39,167,842	5,841,075	8,684,304	14,525,379	14.9	22.2	37.1
1929.....	47,478,167	6,523,850	9,617,256	16,141,106	13.7	20.3	34.0
1930.....	34,881,010	6,318,593	7,713,350	14,031,943	18.1	22.1	40.2
1931.....	17,309,211	3,696,189	2,595,421	6,291,610	21.3	15.0	36.3
1932.....	2,250,200	292,458	240,284	532,742	13.0	10.7	23.7
1933.....	14,953,168	3,134,657	1,848,096	4,982,753	21.0	12.3	33.3
1934.....	15,967,819	3,440,041	2,144,934	5,584,975	21.6	13.4	35.0

* By beneficiation is meant washing, jigging, crushing, screening, drying, sintering, or any process by which the grade or structure of the crude ore is improved. By concentration is meant all of the processes of beneficiation except crushing and screening. The above figures represent the tonnage of the beneficiated except crushing and screening. The above figures represent the tonnage of the beneficiated iron ore and beneficiated manganiferous iron ore (i.e., shipping product) and not the crude ore.

Authority: Compiled by the Mines Experiment Station. There were no shipments of beneficiated ore prior to 1906 except crushed ore from the Soudan mine. The tonnages of beneficiated ore shipped from some of the plants prior to 1923 are estimates, since accurate figures are not available.

SHIPMENTS OF BENEFICIATED IRON ORE FROM MINNESOTA FOR THE PAST FOUR YEARS

Range	Gross tons of beneficiated ore shipped							Total iron ore shipment	% Beneficiated ore of total shipment
	Washed*	Jigged	Sintered	Sinter-Dried†	Dried	Crushed and screened	Total		
1931									
Mesabi	3,160,677	267,787	29,276	0	0	2,207,552	5,665,292	15,270,411	37.1
Vermilion ..	0	0	0	0	0	341,291	341,291	1,140,710	29.9
Cuyuna	10,358§	0	69,706	124,009	34,376	46,578	285,027	898,090	31.7
Minnesota ..	3,171,035	267,787	98,982	124,009	34,376	2,595,421	6,291,610	17,309,211	36.3
1932									
Mesabi	266,282	0	11,167	0	0	220,024	497,473	1,934,719	25.7
Vermilion ..	0	0	0	0	0	18,861	18,861	216,744	8.7
Cuyuna	0	0	15,009	0	0	1,399	16,408	98,737	16.6
Minnesota ..	266,282	0	26,176	0	0	240,284	532,742	2,250,200	23.7
1933									
Mesabi	2,331,328	489,387	6,605	0	0	1,762,019	4,589,339	13,471,625	34.1
Vermilion ..	0	0	0	0	0	86,077	86,077	740,404	11.6
Cuyuna	0	0	41,558	149,824	115,955	0	307,337	741,139	41.5
Minnesota ..	2,331,328	489,387	48,163	149,824	115,955	1,848,096	4,982,753	14,953,168	33.3
1934									
Mesabi	2,614,023	410,257‡	47,496	0	0	1,956,719	5,028,495	14,650,099	34.3
Vermilion ..	0	0	0	0	0	127,356	127,356	785,149	16.2
Cuyuna	42,292	0	116,209	103,045	106,719	60,859	429,124	532,571	80.6
Minnesota ..	2,656,315	410,257	163,705	103,045	106,719	2,144,934	5,584,975	15,967,819	35.0

* Includes some jig concentrates produced in conjunction with washing operations.
§ Includes 9,859 tons of table concentrates.
‡ Includes 4,652 tons of magnetite concentrates.
† Sinter-dried ore is a product produced by screening out the fine ore, sintering same and recombining the hot sinter with the coarse oversize, thereby partially drying the coarse ore; the usual ratio is about 40 percent of sinter and 60 percent of coarse ore.

Authority: Compiled by the Mines Experiment Station. Figures include all shipments of beneficiated iron ore and beneficiated manganiferous iron ore.

Lead and Zinc

THE Lead and Zinc industries have been in the spotlight during the past month, particularly the zinc industry with its recently adopted Code of Fair Competition and its annual meeting held at St. Louis, Mo., April 22. Ralph M. Roosevelt who has served as president of the American Zinc Institute for several years announced his withdrawal from that office, to which he had given his entire time since early March. E. T. Greve has been elected secretary.

The program for the Institute included papers as follows:

Review of World Zinc Conditions—Oliver W. Roskill, London, England.

Meeting of Labor Committee of Prime Western Producers.

Current Events—Julian D. Conover, secretary, American Mining Congress.

National Resources Board and Its Relation to the Zinc Industry—Dr. C. K. Leith, University of Wisconsin, vice chairman, National Resources Board.

Cooperation Between Mining & Smelting Divisions—C. S. J. Trench.

Economic Developments in Zinc Industry During Past Year—(a) Rocky Mountain Region. (b) Mississippi Valley, M. D. Harbaugh. (c) Eastern Region, R. B. Paul.

The Galvanizing Campaign—Its Accomplishments, Its Failures, Its Future, R. M. Roosevelt.

Personal Experiences—Research and Testing—G. C. Bartells. Field Work—Charles Matthews. Advertising and Sales Promotion—K. J. T. Ekblaw.

Permanent Farm Buildings—W. D. James, president, James Manufacturing Co., Ft. Atkinson, Wis.

Do Farmers Want Heavier Coatings on Galvanized Sheets?—Prof. G. W. McCuen, Ohio State University, president, American Society of Agricultural Engineers.

"Seal of Quality" Program: (a) The Manufacturers' Viewpoint—D. T. Haddock, American Sheet & Tin Plate Co.; Edmund P. Severns, Continental Steel Corp. (b) The Distributor's Viewpoint—Ned Ochiltree, Ceco Steel & Wire Co. (c) The Retailer's Viewpoint—W. J. Beechwood, Joplin Supply Co.

THE following is a copy of a letter dated April 5, 1935, addressed to W. A. Janssen, Deputy Administrator, the National Industrial Recovery Board, by the American Zinc Institute:

"We, the undersigned, being the committee of the American Zinc Institute duly appointed to submit, modify and approve a Code of Fair Competition for the zinc industry, and which submitted such code to you, acknowledges receipt of the order of your board dated March 26, 1935, approving the Code of Fair Competition for the Zinc Industry, and also acknowledge receipt of the code so approved and which was attached to such order.

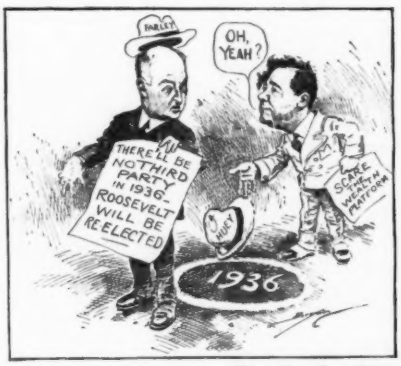
"1. We note that the code so approved contains many changes in the code submitted by the industry. In this connection we call attention especially to paragraph (g) of Section 6 of Article VI and to clause (2) thereof with respect to 'control of production through voluntary agreement or otherwise.' The committee finds it difficult to construe this clause and inasmuch as the same may be construed in a manner inimical to the industry, respectfully requests that your Advisory Council give its interpretation of the phrase 'or otherwise.'

"Pending such interpretation and depending upon whether or not the same is inimical in the opinion of the industry to its interests, the industry begs to advise that it does not acquiesce in said paragraph (g) and will not be bound thereby.

"We would appreciate it very much if you would advise us as soon as possible as to your interpretation of said paragraph (g).

"2. We note that subparagraphs of Section 1 of Article VII have been relettered, so that the third, fourth and fifth subparagraphs have been relettered (c), (d) and (e), instead of (A), (B) and (C), as set forth in the submitted code. The intent of the submitted code was that the subparagraphs now appearing as (c), (d) and (e) should be subdivisions of the second subparagraph which was and is lettered (b). From the change it is not clear whether or not the reports referred to in subparagraphs now lettered (c), (d) and (e) relate to the Prime Western Smelting Division or to all members of the industry. The intent of the code as submitted by the industry was that the reports called for by subparagraphs now lettered (c), (d) and (e) would be made only by the members of the Prime Western Smelting Division. We believe that this is the intent of the changes made in this article, since there is a colon after subparagraph (b). We will proceed upon this assumption and interpretation.

"3. We note that by the order approving this code the provisions of Article III, Section 1, and provisions related thereto, insofar as they permit of averaging, shall remain in force and effect for 60 days, and that thereafter the averaging provisions shall be stayed and the code amended by a subsequent order eliminating the averaging provisions, or such provisions shall be superseded by appropriate provisions submitted by the Code Authority which shall conform to established administration policy, unless good cause is shown by the Code Authority before the termination of such period for a continuation of the averaging provisions in their present form or with modifications thereof.



—The Sunday Star

"The code as submitted contains the averaging provisions which the industry considers essential and necessary. The industry is willing to accept the 60-day provision in your order, but subject to the condition that in the event such averaging provisions are stayed as provided in the order, or are eliminated by a subsequent order, or are modified in a manner not satisfactory to the industry, the industry shall not feel bound by the code and will not acquiesce therein.

"Prior to the expiration of the 60-day period, the industry will submit to the board evidence to sustain the necessity and desirability of the averaging provisions to the employe as well as the employer.

"4. We note that by the order approvin this code, the scope of subparagraph (a) of Section 1 of Article III is enlarged. We are willing to accept the survey provision of your order but subject to the condition that if any change in the wage schedule results therefrom the industry will not acquiesce in such change nor feel bound by the code unless the industry in the district affected shall agree to such change.

"Respectfully submitted,

"B. N. ZIMMER,
"HOWARD I. YOUNG,
"JOHN A. ROBINSON,
"RALPH M. ROOSEVELT,
"Executive Committee of American Zinc Institute, Inc., acting as Code Committee for the Industry.
"By RALPH M. ROOSEVELT,
"Chairman.

"The undersigned chairman has been authorized and instructed by the four above listed members of the above committee to send this letter.

"(Signed) RALPH M. ROOSEVELT,
Chairman."

THE following gentlemen have been selected as members of the Code Authority for the Code of Fair Competition for the zinc industry:

B. N. Zimmer, J. A. Robinson, J. R. Hobbins, J. E. Hayes, Ralph M. Roosevelt.

One member is still to be elected by the members of the industry who are not members of the American Zinc Institute.

THE National Industrial Recovery Board has issued the following statement:

The zinc code, which became effective Monday, April 8, provides a basic maximum 40-hour week averaged over three-month periods, at minimum wages varying between 30 cents and 47½ cents an hour. The order of approval, however, limits the averaging provisions' operation to 60 days, at the end of which time the averaging provisions "shall be automatically stayed and the code amended * * * to eliminate the said averaging provisions, or the said averaging provisions shall be superseded by appropriate provisions submitted by the Code Authority which shall conform to established administration policy."

An eight-hour daily limitation is placed in the maximum hours provisions of the code, and the board is empowered to name an impartial investigator "to review conditions in the mining division of the industry and specifically concerning the application of the eight-hour provision in conformity with the state laws." The order of approval requires the impartial investigator "to review conditions in the Mississippi Valley, southern and southwestern districts of the mining division of the industry for the purpose of reporting to the board within 90 days from the effective date of this code, the amount of adjustment of code wages (not in excess of the recommendations of the Labor Advisory Board—35 cents per hour above ground and 40 cents per hour underground) possible in said districts * * * and that the board after reviewing said report and consulting with all interests concerned, may modify the minimum code wage provisions for said districts of said mining division, as it may deem necessary upon the basis of said report." The code rates are 30 and

Primary lead smelted or refined in the United States, 1932-1934 by sources, in short tons

Source	1932	1933	1934
Domestic ore:			
Alaska	1,230	1,030	786
Arizona	1,134	1,718	3,507
California	1,125	364	419
Colorado	2,288	2,169	3,568
Idaho	68,606	74,210	73,798
Illinois	68	241	282
Kansas	* 5,667	* 5,089	* 8,140
Kentucky	....	164	280
Missouri	79,483	85,564	105,570
Montana	1,572	5,944	7,263
Nevada	390	2,318	11,393
New Mexico	10,606	10,727	10,375
New York	†	....	†
Oklahoma	* 9,285	* 15,076	* 20,031
Oregon	4	7	21
Tennessee	....	†	†
Texas	16	3	7
Utah	70,111	60,049	60,223
Virginia	†	†	....
Washington	909	653	849
Wisconsin	700	477	100
Undistributed	3,455	1,005	1,729
Zinc residues	392	1,033	986
	257,041	267,841	309,327
Foreign ore:			
Canada	3,797	3,472	2,514
Europe	4,491	2,600	45
Mexico	334	257	1,011
South America	2,631	1,348	4,028
Other foreign	10,494	....	2,643
Foreign base bullion:			
Mexico	11,164	6,021	703
Peru	113	265	451
	33,024	13,963	11,395
Grand total	290,065	281,804	320,722

* The smelter output of lead in Kansas and Oklahoma is separated on the basis of mine output as the Bureau of Mines has been unable to obtain an accurate separation of smelter output.
† Included under "undistributed." Bureau of Mines not at liberty to publish.

Refined primary lead produced in the United States, 1932-1934, in short tons

	1932	1933	1934
Domestic desilverized lead	156,683	151,828	175,073
Domestic soft lead	63,130	85,578	102,024
Domestic desilvered soft lead	35,524	22,210	22,744
	255,337	259,616	299,841
Foreign desilvered lead	33,024	13,963	11,395
Total refined primary lead	288,361	273,579	311,236

Refined primary lead available for consumption in the United States, 1932-34, in short tons

Supply:			
Stocks in bonded warehouse, January 1	*	*	*
Imports of pigs, bars, and old metal †	44	63	285
Production	288,361	273,579	311,236
	288,405	273,642	311,521
Withdrawn:			
Exports—			
Pig lead	23,516	22,835	5,906
In manufactures, with benefit of drawback	7,220	6,508	7,472
Stocks remaining in bonded warehouse, Dec. 31	*	*	*
	30,736	29,343	13,378
Available for consumption	257,669	244,299	298,143

Imports and stocks of lead in ore and bullion, 1932-1934, in short tons (General imports ‡)

Imports of lead in ore and matte	21,001	5,958	10,760
Imports of lead in bullion	13,462	1,587	2,220
Remaining in warehouse, Dec. 31:			
Lead in ore and matte	42,314	21,540	15,709
Lead in bullion	* 3,769	* 1,058	* 606
Average selling value in cents per pound	3.0	3.7	3.7

* Stocks of pigs, bars, etc., in bonded warehouse not separately recorded. Included with base bullion.
† Includes a small quantity, not separable, of "old, reclaimed, and scrap."
‡ Imports for 1934 are "imports for consumption"; "general" imports not available.

35 cents an hour, respectively, in all three districts.

The code is to be administered by a Code Authority of six voting members, five to be selected from the members of the Executive Committee of the American Zinc Institute, Inc., and one elected by members of the industry not members of the Institute.

There are about 12,800 people employed in the industry, about two-thirds of them underground. The mine production of recoverable zinc declined from 775,000 tons in 1926 to 285,000 in 1932. In the same period world production declined from 1,768,000 tons to 1,074,000 tons.

THE following information is furnished by the United States Bureau of Mines:

The output of refined primary lead in the United States, from domestic ore, in 1934, amounted to 299,841 short tons, valued at $22,188,000, compared with 259,616 tons, valued at $19,212,000, in 1933, an increase of 15 percent in quantity and in value. The production of refined lead from foreign sources, principally from Peru, Newfoundland, and Canada, amounted to 11,395 short tons—a decrease of 18 percent from production in 1933. The total output of primary lead from domestic and foreign sources was 14 percent higher than that of 1933.

About 34 percent of the lead produced from domestic ore was derived from Missouri, 24 percent from Idaho, and 19 percent from Utah. The amounts produced by these states in 1933 represented 32 percent, 28 percent, and 22 percent of the domestic total, respectively.

The quantity of refined primary lead available for consumption in the United States in 1934 amounted to about 298,000 short tons, compared with about 244,000 short tons in 1933—an increase of 22 percent.

Antimonial lead produced at primary smelters in 1934 totaled 16,607 tons, containing approximately 5,901 tons of primary domestic lead, 330 tons of primary foreign lead, 1,657 tons of primary domestic antimony, 18 tons of primary foreign antimony, 8,113 tons of secondary lead and 588 tons of secondary antimony.

THE American Bureau of Metal Statistics has made the following report:

"In 1934 the production of zinc concentrates was reported by 25 mills outside of New Jersey, Wisconsin and the Tri-state district, compared with 24 in 1933. The number of producing concerns is fewer inasmuch as there are several who operate two or more mills.

"The total production of lead and zinc concentrates in the United States, both by jigging and floating, allocated according to states, is given in the accompanying tables.

"Production of lead concentrates, United States (except Wisconsin and New Jersey districts) in tons of 2,000 lbs.:

	Weight	Lead content
1934—		
Arizona	3,558	1,646
Alaska	1,632	831
Colorado	433	184
Idaho	115,707	66,592
Illinois	239	140
Missouri	121,779	91,410
Montana	7,467	4,360
Nevada	6,400	4,382
New Mexico	25,059	9,593
Utah	87,343	47,278
Washington	374	240
Appalachian region	6,778	4,288
Totals	376,769	230,944
Tri-state	37,060	29,700
1933—		
Arizona	.....	.....
Alaska	2,305	1,185
Colorado	230	94
Idaho	123,073	71,958
Illinois	297	188
Missouri	117,267	86,443
Montana	3,488	2,519
Nevada	.....	.....
New Mexico	28,390	10,933
Utah	80,228	46,264
Washington	1,075	733
Appalachian region	4,823	3,196
Totals	361,176	223,513
Tri-state	30,750	24,600

SLAB ZINC STATISTICS (ALL GRADES), 1929-1935
(Tons of 2,000 pounds)

	(1) Stock at Beginning	(2) Production	(3) Total Item(1) plus Item(2)	(4) Shipments	(5) Stock at End	(6)* Shipped for Export	(7) Retorts Operating end Period	(8) Average Retorts during Period	(9) Unfilled orders end of Period	(10) Daily Average Prod.
1929	46,430	631,601	678,031	602,601	75,430	6,352	57,999	68,491	18,585	1,730
Monthly average		52,633		50,217		529				
1930	75,430	504,463	579,893	436,275	143,618	196	31,240	47,769	26,651	1,355
Monthly average		42,039		36,356		16				
1931	143,618	300,738	444,356	314,514	129,842	41	19,875	23,099	18,273	822
Monthly average		25,062		26,210		3				
1932	129,842	213,531	343,373	218,517	124,856	170	21,023	18,560	8,478	583
Monthly average		17,794		18,210		14				
1933	124,856	324,705	449,561	344,001	105,560	239	27,190	23,653	15,978	890
Monthly average		27,059		28,667		20				
1934—										
Jan.	105,560	33,077	138,637	26,656	111,981	44	28,744	26,975	26,717	1,067
Feb.	111,981	30,296	142,277	32,485	109,792	0	30,763	27,779	26,676	1,082
Mar.	109,792	33,845	143,637	32,877	110,760	3	26,952	28,816	21,976	1,092
Apr.	110,760	30,686	141,446	32,072	109,374	0	26,692	25,349	27,396	1,023
May	109,374	30,944	140,318	35,589	104,729	0	27,193	25,086	20,831	998
June	104,729	25,160	129,889	30,217	99,672	48	31,284	27,720	21,726	839
July	99,672	24,756	124,428	26,966	97,462	0	30,324	29,048	16,058	799
Aug.	97,462	26,169	123,631	21,663	101,968	0	30,442	30,637	14,281	844
Sept.	101,968	26,515	128,483	21,913	106,570	0	31,352	30,562	11,121	884
Oct.	106,570	34,527	141,097	30,294	110,803	0	31,964	32,179	19,188	1,114
Nov.	110,803	34,977	145,780	29,928	115,852	53	32,793	30,265	31,929	1,166
Dec.	115,852	35,981	151,833	32,003	119,530	0	32,944	32,226	30,786	1,151
		366,933		352,663		148				
Monthly average		30,578		29,389		12		28,887		1,004
1935—										
Jan.	119,830	35,614	155,444	35,538	119,906	0	32,658	32,230	25,993	1,149
Feb.	119,906	33,072	152,978	34,903	118,075	33	33,210	33,157	25,816	1,181
Mar.	118,075	36,213	154,288	41,137	113,151	0	35,196	32,535	20,000	1,168
							29,691†	29,665†		

* Export shipments are included in total shipments Item (4).
† Equivalent retorts computed on 24-hour basis.

SLAB ZINC PRODUCTION, 1932, 1933, 1934
(Tons of 2,000 pounds)

	1932	1933	1934
(a) Primary zinc from domestic ore:			
By distillation	183,940	217,695	278,709
By electrolytic	23,208	88,315	76,657
	207,148	306,010	355,366
(b) Secondary zinc from ordinary type smelters	6,383	18,695	11,567
Total—American Zinc Institute monthly statistics	213,531	324,705	366,933
Additional production not included in regular monthly figures:			
(c) Secondary zinc from large graphite retorts	8,335	11,392	8,124
Total domestic	221,866	336,097	375,057
(d) Primary zinc from foreign ore (per U. S. Bureau of Mines)	.....	1,172	8,224
Total—all classes	221,866	337,269	383,281

TRI-STATE ZINC AND LEAD ORE PRODUCERS ASSOCIATION
(Bulletin for Week Ending April 6, 1935)
(Dry tons of 2,000 pounds)

	Zinc Concentrates			Lead Concentrates		
	This week	Last week	Year ago	This week	Last week	Year ago
Total stocks (sold and unsold)	21,614	19,634	13,926	16,714	16,723	11,864
Net reserve stock	20,548	18,909	11,659	16,656	16,665	11,571
Production*	8,189	6,989	6,196	853	757	1,032
Shipments	6,209	6,930	5,995	862	1,120	1,386
Sales reported	6,550	6,680	6,696	862	1,137	1,410
* Included tailing mill production	1,862	1,756	1,458	....	....	....
Base price, Joplin	$26.00	$26.00	$28.00	$35.00	$35.00	$42.50
Metal price, average for week:						
Zinc, East St. Louis; lead, St. Louis	3.900c	3.900c	4.310c	3.500c	3.470c	3.900c

Mill Statistics:	This week	Last week	Year ago
Mine mills operated 32 hours or more	26	22	26
Mine mills operated less than 32 hours	1	2	2
Tailing mills operated 96 hours or more	17	15	16
Tailing mills operated less than 96 hours	1	3	2
Total mills which produced more than 25 tons during week	45	42	46
Mills which produced less than 25 tons during week	5	5	8
Total number of mills operated during week	50	47	54

Mine Mills Operated This Week: Admiralty No. 2; American Diamond; Black Eagle; Byrd Mary Jane; C. M. & R. Bird Dog, See Sah & Wilbur; Crabapple; V. H. Barr; Century Scott; Dines Wilson; D. & C.; E. P. Central; E. W. No. 4; Federal Jarrett; Bluebonnet; Interstate Woodchuck; K. & O. Discard; Lost Trail; Mary M. Beck; Mid-Continent; Mission; New Blue Mound; Playter; Rialto; St. Louis No. 4 and No. 8; U. Z. Royal; Velie Lion; Meteor; St. Nicholas.

Tailing Mills Operated This Week: Atlas; Aul; Bailey; Beck No. 3; Britt; Cardin; C. M. & R. Beaver & Webber; King Brand; E. W. No. 7; Peru-Laclede; Lawyers; Luck Ox; Myers No. 2; Semple Rightley; Skelton; Mo. Chitwood; Tri-State Ottawa; Youngman.

"The Tri-state production is stated separately inasmuch as it is not of our own accounting. Its lead content is calculated at 80 percent."

SALES of Prime Western and Brass Special grades of zinc by the 13 smelters who make returns to the American Zinc Institute amounted to 12,251 tons in March as compared with 14,352 tons in February and 11,254 tons in January. Sales of zinc in March, 1934 were 9,658 tons.

The weighted average selling prices of Prime Western for March, 1935, were 3.886c for prompt and 3.875c for futures, E. St. Louis basis representing advances of about 18 points and 12 points respectively as compared with prices realized in the previous month.

The figures for March are shown below. Returns do not include sales by producers of High Grade zinc nor sales of a few producers of Prime Western.

THE statistics shown herewith are released by the American Zinc Institute.

THAT modern machinery has given more jobs than it has taken was demonstrated statistically by R. E. W. Harrison, Chief, Machinery Division, Bureau of Foreign and Domestic Commerce, Department of Commerce, in an address at the University of Tennessee, Knoxville.

"There has been a consistent effort during the depression," Mr. Harrison said, "to discredit and restrict the progress of mechanization on the grounds that it is a breeder of unemployment. Although it is obvious that a given machine may tend to eliminate hand labor, often in a spectacular way, the machine year by year contributed to a larger volume of national employment until the crash of 1929 which was due to financial rather than technological factors. Increased mechanization now is not a barrier to re-employment but is one of the ways out of the depression.

"The American standard of living is measured by the use of machinery. This is illustrated statistically by an increase in the number of gainfully employed from 38 millions in 1910 to 49 millions in 1930, a net gain of 11 millions of workers. However, during the same period, farm workers actually decreased from 12½ millions in 1910 to 10½ millions in 1930, a loss of 2 millions and industrial workers increased from 11½ millions in 1910, to 15½ millions in 1930, a gain of 4 millions. Of still more importance, service workers increased from 14 millions in 1910 to 23 millions in 1930, a net gain of 9 millions, two-thirds of which occurred in the past decade."

Mr. Harrison stated that this increase in service employment is due principally to the development of the machine which has made it possible for so many of our people to enjoy in a 20-year period enough of life's goods to employ an additional army of 9 millions of workers to distribute and service them.

PERSONALS

Karl Jungbluth has been elected president of the Dawson Daylight Coal Company to fill the vacancy in that office caused by the death of K. U. Mequire.

The Secretary of War, Mr. Dern, has appointed **C. F. Richardson**, president, West Kentucky Coal Company, to membership on the Board of Managers of the Inland Waterways Corporation.

J. P. Williams, Jr., president, Koppers Coal Company, has accepted the invitation of the United States Chamber of Commerce to join in a round table discussion during the annual meeting of the chamber. He will speak on "Coal—Its Future Prospects."

Newman W. Adsit has been elected treasurer of the New Jersey Zinc Company, to succeed the late Henry S. Wardner.

Paul Weir, vice president, Bell & Zoller Coal & Mining Company, has returned from a short trip to the west coast.

Dr. C. K. Leith will address the 12th annual meeting of the Coal Division of The American Mining Congress taking as his subject the work of President Roosevelt's Planning Committee for Natural Resources.

Colonel Warren R. Roberts, chairman of the board, Roberts & Schaefer Company, passed through Washington en route to his Chicago home, after a sojourn in Florida where he has enjoyed a well earned vacation.

Julian D. Conover, secretary, The American Mining Congress, attended the annual meeting of the American Zinc Institute at St. Louis, Mo., April 22.

Robert Palmer, secretary of the Colorado Metal Mining Fund, and the state chapter of The American Mining Congress, was a recent Washington visitor.

The Advisory Board of the United States Bureau of Mines is composed of the following mining representatives: **J. P. Williams, Jr., L. E. Young, L. C. Madeira, 3rd, Cadwallader Evans, Jr., Eugene McAuliffe, Cleveland E. Dodge, H. A. Guess, Frank M. Smith, C. K. Leith, Howard N. Eavenson, Howard I. Young, Julian D. Conover, John T. Ryan** and **E. W. Bullard.** The first meeting of the committee was called for April 25, 1935.

Arthur Notman is in South Africa on business, sailing from New York in March.

Scott Turner, former director of the United States Bureau of Mines, has been on vacation for several weeks in Florida.

L. S. Cates has been elected president of the United Verde Copper Company, succeeding **Robert E. Tally.** Other officers of the company are **Cleveland Dodge, J. F. McClelland, H. DeWitt Smith, John H. Hall, Jr., A. T. Thomson** and **Henry Krumb.**

M. A. Matthews has been appointed as sales representative in the Coal Preparation Division of the Jeffrey Manufacturing Co., Columbus, Ohio. Mr. Matthews' experience in coal preparation covers both European and American practices.

The Bunker Hill and Sullivan Mining and Concentrating Company announce with regret the retirement of **Frank M. Smith** as smelter director.

Howard I. Young, president of the American Zinc, Lead & Smelting Company, has been elected president of the American Zinc Institute.

D. A. CALLAHAN

D. A. Callahan, president, Callahan Zinc Lead Company has returned to Wallace, Idaho, after spending several months in the East. He appeared before the Senate committee conducting hearings upon the Wagner Labor Disputes bill.

Marshall Haney, a mining engineer of Geer, Va., has completed the preliminary examination of several old gold mines in Georgia for a group of Boston bankers.

Battelle Memorial Institute of scientific and industrial research, Columbus, Ohio, announces the appointment of **Dr. H. R. Nelson** as a member of the technical staff, who will be in charge of a research project consisting of a study of the application of electron-diffraction methods to metallurgical problems.

Among the callers at the headquarters of The American Mining Congress during the month were: **Donald A. Callahan**, president, Callahan Zinc Lead Co.; **Eugene McAuliffe**, president, Union Pacific Coal Company; **Herbert Jackson**, Pickands Mather & Company; **Howard I. Young**, president, The American Mining Congress; **L. W. Shugg**, General Electric Company; **Robert S. Palmer**, Colorado Metal Mining Fund; **J. G. Clark**, Boulder, Colo.; **Frank M. Smith**, Bunker Hill & Sullivan Mining and Concentrating Company; **John Lynch**, Phelps Dodge Corporation; **S. W. Blakslee**, Philadelphia & Reading Coal & Iron Company; **Horace M. Albright**, U. S. Potash Company; **J. C. KempvanEe**, secretary, Gold Producers Association of America; **Henry O'Bleness**, Berwind White Coal Mining Company; **P. C. Thomas**, Koppers Coal Company; **Colonel W. R. Roberts**, Roberts & Schaefer Company; **W. D. Turnbull**, Westinghouse E. & M. Company; **E. J. Newbaker**, Berwind White Coal Mining Company.

Bureau of Mines Advisory Board Meets

IN RESPONSE to invitations from the Secretary of the Interior, 24 members of the advisory board of the Bureau of Mines met in Washington on Monday, April 15, with Director John W. Finch and the branch chiefs of the bureau. After a brief statement by Dr. Finch, outlining the organization and functions of the bureau, the board elected Howard N. Eavenson as chairman and Julian D. Conover as secretary. After luncheon at the Cosmos Club, the board resumed its session, at which the division chiefs of the bureau were present.

The day was spent in consideration and discussion of matters of general bureau policy affecting relations with the mineral and allied industries and with the public.

The board agreed that in its opinion the fact-finding work of the Government with respect to minerals and the mineral industry should be concentrated in the Bureau of Mines—the results to be available to the Congress, as heretofore, and to emergency governmental organizations; that as between the bureau and various trade organizations, statistical and economic studies should be made by the former with the help and cooperation of the latter; that the bureau should give especial attention to ways of preventing waste of natural gas during production of this valuable resource; that the Bureau of Mines should not be given statutory power to enforce its safety recommendations or to enter mines for inspection of safety practices under normal conditions or following disasters, but should proceed with its policy of winning acceptance of its recommendations by methods of education as in the past. With respect to statistical and economic studies, however, the board agreed that it would be desirable for the Bureau of Mines to have statutory power to compel operators in the mineral and allied industries to furnish statistical information, and under oath.

The chairman was authorized to appoint five committees to study various details of bureau work and prepare recommendations to be considered at a future meeting of the board.

The members who attended the meeting, and the phases of the mining and allied industries they represent, are listed below:

EASTERN BITUMINOUS COAL PRODUCERS

James P. Williams, Jr., Pittsburgh, Pa.; president, National Coal Association; president, the Koppers Coal Company.

Lewis E. Young, Pittsburgh, Pa.; vice president, Pittsburgh Coal Company.

EASTERN ANTHRACITE PRODUCERS

Louis C. Madeira III, New York, N. Y.; executive director, Anthracite Institute.

Cadwallader Evans, Jr., Scranton, Pa.; general manager, the Hudson Coal Company.

WESTERN COAL PRODUCERS

Eugene McAuliffe, Omaha, Nebr.; president, Union Pacific Coal Company.

D. S. Hanley, Seattle, Wash.; vice president, Pacific Coast Coal Company; secretary-treasurer, Coal Producers Association of Washington; secretary, District VII Code Authority of Division V.

MINING EMPLOYES

A. D. Lewis, Washington, D. C.; United Mine Workers of America.

Irving W. Bucklin, representing William Green, Washington, D. C.; president, American Federation of Labor.

COPPER INDUSTRY

Cleveland E. Dodge, New York, N. Y.; vice president, Phelps Dodge Corporation.

SILVER, LEAD, AND ZINC INDUSTRIES

Frank M. Smith, Kellogg, Idaho; smelter director, Bunker Hill and Sullivan Mining and Concentrating Company.

NONMETAL MINERAL INDUSTRIES

Otho M. Graves, Easton, Pa.; president, General Crushed Stone Company; ex-president, National Crushed Stone Association; chairman, Code Authority, Crushed Stone, Sand and Gravel, and Slag Industries.

MINERAL POLICY AND GOVERNMENT

Dr. C. K. Leith, Madison, Wis.; member, Science Advisory Board; member, Business Advisory and Planning Council for Department of Commerce; member, Planning Committee for Mineral Policy; Department of Geology, University of Wisconsin.

MINING AND METALLURGICAL ENGINEERING

Howard N. Eavenson, Pittsburgh, Pa.; past president, American Institute of Mining and Metallurgical Engineers.

LIAISON REPRESENTATIVE FOR MINING INDUSTRY IN GENERAL

Howard I. Young, St. Louis, Mo.; president, American Mining Congress; president, American Zinc, Lead, and Smelting Company.

Julian D. Conover, Washington, D. C.; secretary, American Mining Congress.

IRON AND STEEL INDUSTRIES

Forrest S. Rutherford, representing Thomas M. Girdler, Cleveland, Ohio; vice president, American Iron and Steel Institute; chairman of the board and president, Republic Steel Corporation.

PETROLEUM INDUSTRY

Amos L. Beaty, New York, N. Y.; vice president and member executive committee, Phillips Petroleum Company; director, American Petroleum Institute.

Axtell J. Byles, New York, N. Y.; president, American Petroleum Institute; member, Planning and Coordination Committee under Petroleum Code.

GAS INDUSTRY

Frank L. Chase, Dallas, Tex.; member advisory council, American Gas Association; second vice president and operating manager, Lone Star Gas Company.

J. D. Creveling, New York, N. Y.; ex-president, Natural Gas Association of America; advisory council, American Gas Association.

GOLD PRODUCERS

Errol MacBoyle, San Francisco, Calif., Gold Producers Association of America.

EXPLOSIVES AND RESEARCH

J. Thompson Brown, Wilmington, Del.; vice president, E. I. du Pont de Nemours and Company.

HEALTH AND SAFETY APPLIANCES

George H. Deike, representing John T. Ryan, Pittsburgh, Pa.; vice president and general sales manager, Mine Safety Appliances Company.

E. W. Bullard, San Francisco, Calif.; president, E. D. Bullard Company.

AMERICAN Metal Market has announced the publication of its 28th annual edition of Metal Statistics. This edition of Metal Statistics furnishes, in its usual compact and handy form, a record of production, consumption, imports, exports, stocks, price fluctuations and averages (monthly and annually), data on various brands, analyses, trade terms, custom duties, etc., applying to finished and semi-finished ferrous and non-ferrous metal productions as well as raw materials.

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Fallacies of Social Reform Through Codification of Industry

(*Continued from page* 64)

liorated. The way in which to preserve the existing order of society is to create more capitalists, to broaden the base of the system by seeing to it that a far larger number of us have a stake in the country, own a portion of it however small it may be. This is not to be done by confiscating the income and savings of some and dividing the largess to others. That only weakens and softens the fibre of the distributees. By removing the necessity for self help it destroys the very means which nature provides for development of individual strength. In the end it fails to solve the problem any way because experience shows that the number of the dependents in those circumstances tends to grow until current production must needs be spread so thinly as to reduce all to a low level of subsistence. It is to be done, if at all, by opening and guarding the door of opportunity for productive activity by the individual. At best there will be, as always, a residuum mainly of the least valuable element of society but including valuable elements overtaken by misfortune, which must be carried on the backs of the strong and the fortunate. I favor legislation to provide certain and orderly means of caring for people in those categories and a fair distribution of the burden.

In trying to resuscitate prostrate industry we need to proceed on some conclusion concerning the nature of the forces that brought it low. I think that many of us are beginning to think that nothing is more destructive of a balanced economy than surplus, idle, unneeded capital, including fixed capital and liquid capital. The prosperity of the decade preceding 1931 was largely itself the indirect cause of the depression. Too much was saved, too much was wasted, too little consumed. After provision of capital from savings for every legitimate need there was too much surplus for speculative enterprise, bad loans abroad and at home. The collapse came with the realization that price levels and values had risen far beyond a tenable basis, that productive rate and capacity had run beyond the possibility of continued maintenance on that basis. During the period of reaction which we call the depression we live on the accumulated fat of former years. We shall "go" again when the unneeded capital and surplus plant has been consumed or scrapped. To prevent a recurrence of the disastrous cycle, is it not necessary to consume more of the fat as we go along?

I do believe that labor has had a legitimate kick, the white collar man has had a legitimate kick, that is to say, the great majority of us have had a legitimate kick because in the transition of our country from a consumer to a vendor of capital we have been caught in the jam produced by organized thrift and the unwise use of surplus savings arising from it. But I do not think that prosperity is to be regained by destruction of active live capital, the preservation of inactive obsolete capital, prevention of accumulation of needed capital, by profitless business, by political management of industry, by governmental ownership and conduct of business, by pegging the value of labor and personal service in general, regimentation by law of ordinary commercial affairs, debasement of the currency and repudiation of contracts. These measures are retrogressive, the product of a mood of defeatism.

I am impressed with the idea that economic survival and economic progress of an organized group of people, whether it be a corporation or a nation, rests upon competitive endeavor of the individual member of the group in the same way that progress of any species of animal life depends on the response to the necessities of existence which nature places upon all living things. It is because the Utopians, the mystics, the dreamers, the radicals seek release from the hard realities of life, the means as well as the price of progress, that their schemes for defeating nature itself have an extraordinary allure to the average run of people in times like these. Newton D. Baker and Garet Garrett have recently noted the decline of self reliance in this country and its expression in the familiar measures through which the Government has been made to assume the burdens of everybody, everywhere. If we as individuals had possessed the courage and fortitude to face the consequences of economic catastrophe, to take our losses and pay the piper, to refuse the palliatives and anesthetics which ease the pain without removing its cause we would now I think, be leading the other nations of the world up the heights of recovery instead of floundering on the tail end of the movement in the swamps at the base of the hill.

Let us turn about and planting our feet on the firm foundation of successful economic experience in this country:

(1) Balance the budget at any sacrifice required.

(2) Stabilize the value of the dollar and assume the consequences.

(3) Quit trying to peg the value of production by arbitrarily fixing and leveling wages, hours, and prices.

(4) Quit mixing measures for social reform with taxation, finance and regulation of commerce.

(5) Quit trying to protect outmoded, obsolescent, surplus and unneeded capital.

(6) Quit trying to exterminate the ruggedness in American citizenry.

(7) Protect the possibility for a return to a high scale of living at any loss of foreign trade which that may entail.

(8) Keep the emphasis on economic recovery until it is attained when we shall be in the mood to turn to a consideration of measures for the widest feasible diffusion of the national income consistent with maintenance of production facilities, requirements for replacement of obsolete capital and for new capital necessary to keep pace with scientific and technological progress, maintenance of untrammeled opportunity for individual enterprise and bountiful reward for successful individual endeavor.

Wheels of Government

(*Continued from page* 66)

volved in the handling of the legislation providing for the extension of the NRA.

The past month witnessed the enactment and approval on April 19 of H. R. 6359, known as the "pink slip" bill. Thus Section 55 (b) of the Revenue Act of 1934 is repealed and taxpayers will not be compelled to furnish the statement required thereby. There remains in the Revenue Act of 1934, Section 148 (d), under which corporations are required to report salaries, commissions, bonuses or other compensations of their employes if in excess of $15,000, and further that the Secretary of the Treasury shall submit an annual report to Congress compiled from the returns made containing the names of, and the amounts paid to, officers and employes, and the name of the paying corporation. Such a report becomes an excellent "sucker list."

The Interior Department appropriations bill for 1936 as passed by the Senate on April 16, and now in conference, contains increases in the appropriations for the Bureau of Mines and the Geological Survey in the amount of $628,000 and $350,000, respectively. The Bureau of Mines increase followed the detail of the amendment introduced by Senator Pope (Dem., Idaho) and the appropriations for these two most important bureaus for the year 1936 now stand in total: Bureau of Mines, $2,045,311; Geological Survey, $2,457,560.

INCLUDED in an order amounting to more than $1,250,000 for new electric equipment to be furnished and completely installed by the General Electric Company at the Lackawanna plant of the Bethlehem Steel Company, are seven d-c motors totaling 22,500 horsepower for driving the finishing end of Bethlehem's new continuous hot strip mill—one of the world's largest. This finishing end drive will consist of two 4,500-hp. and three 3,500-hp. motors, and one each of 2,500-hp. and 500-hp. ratings.

In addition, the order includes two 3-unit, 6,000-kw. motor-generator sets to supply power for the above motors; one 3-unit, 6,000-kw. motor-generator set to supply power to the drives of two tandem cold strip mills; the most modern ventilating system yet used in a steel mill motor room; and complete switchgear and control equipment for the preceding apparatus, including 19 metal-clad oil circuit breakers each with an interrupting capacity of one-half million kilovolt-amperes.

Southern Appalachian Mining and Social Problems

MINERALS receive due attention in *Miscellaneous Publication* 205 of the United States Department of Agriculture, 1935, entitled "Economic and Social Problems and Conditions of the Southern Appalachians." Fifteen economists in the Bureau of Agricultural Economics and in other organizations contributed to the 184 pages. A useful map shows the 109,500 square miles in those parts of the nine states of Maryland, Virginia, West Virginia, Kentucky, North Carolina, South Carolina, Tennessee, Georgia, and Alabama, that comprise the Southern Appalachians.

One paragraph in this report is of especial interest to mining men:

"Two important specialized uses of land. . . . exploitation of minerals and development of water power . . . deserve special consideration. Together they constitute the principal source of power and, to a lesser extent, the raw materials that have permitted the development of manufacturing and of an increasing complex economic organization."

In 1930, there were 1,625,000 persons 10 years old and over in what is termed "the region" (80 percent of the 109,000 square miles) who were usually employed at some gainful occupation or who were temporarily so employed at the time the census was taken. Slightly more than a third were engaged in agriculture which was the chief source of employment in almost half of the counties. Manufacturing and mechanical industries were second in giving employment. Extraction of minerals was the third largest employer: the five physiographic divisions employed 191,000 persons, at least 85 percent being engaged in mining coal. Many counties that yield coal also produce some petroleum and natural gas. In 1930, West Virginia contributed nearly 70 percent of the one hundred seventy-two million tons of coal, followed by Kentucky with 23 percent, Virginia with 6 percent, and the remainder by Tennessee. Considerable marble was produced in Pickens County, Georgia; cement and marble in Knox County, and copper in Polk County, Tennessee; and building stone in Morgan, Berkeley, and Jefferson Counties, West Virginia. The following excerpts are from the publication cited:

"Although bituminous coal is found over a large part of the Cumberland and Allegheny Plateaus and the Upper Ohio hills, it is improbable that the production of coal will increase the opportunities for employment in the future as rapidly as in the past. * * * With the rapid natural increase of population in the coal-mining areas it would appear that either emigration is essential to the economic welfare of those remaining in coal-mining communities or some use for the coal must be developed locally. * * *

"Over a period of 30 years, 1900-1930, production (of coal) increased from 30,500,000 tons to 172,000,000 tons. This development drew thousands of families to coal-mining centers * * *. On the whole, the development of coal mining has not made for a satisfactory economic organization. The coal-mining camps, usually erected and owned by the owners of the mines, have often been unwholesome. The work in the mines has usually been irregular, and even before the present economic depression most mines were closed from one to several months each year. When the mines are closed most miners are able to earn very little. Many of the mines are located where there are few other industries and little agriculture. Moreover, it has been difficult for miners to raise their own fruits and vegetables. The land around the mining camps is frequently owned by the mine operators in large tracts and allowed to remain in forest and woodland. Even where the land is available for gardening, usually little of it would be adapted to cultivation. Hence, although coal mining has provided employment for more people than has any other occupation except agriculture, it has unfortunately relocated the people where alternative opportunities are not usually to be found, and in an industry where employment has been very irregular."

The foregoing is not a new story, because it has happened in other regions of the United States. And coal mining is not alone in the Southern Appalachians as this report states that the forests are in a "run-down condition" and "it seems improbable that the manufacturing industries will provide additional employment, except possibly of temporary duration, for many years." The production of mine timbers, fuel wood, logs, poles, and other wood gives employment to 200,000 farmers for two to four weeks a year.

Methods of Surface Waste Disposal

(*Continued from page* 91)

tower, though it is possible by using bottom dump buckets to dump at an intermediate point. All aerial tramways load from bins through gates or feeder conveyors, and these should be of ample size to fill the buckets quickly and to handle the large pieces of waste without clogging.

Unless very careful studies of the disposal area are made, tramways are apt to prove expensive in that the space will be filled before the plant is worn out and a relocation made economical. An analysis of three tramways in southern West Virginia showed initial investments of .5 cent, .85 cent, and 1.5 cents per cu. yd. of disposal space.

The life of tramway ropes is a perennial problem for tramway owners. This life depends on circumstances. The track cables are attacked by a combination of atmospheric agencies, often aided by fumes from burning waste, and the mechanical wear due to the travel of the buckets. These cables should be frequently inspected and kept well lubricated. The life of the traveling cable is determined mostly by the size and condition of the sheaves. If these are numerous and small, the life of the rope will be short. Where tandem driving sheaves are used, they must be particularly well designed to avoid overstressing the cable in the drive. Grip sheaves for driving must be selected with great care, or the life of the rope will be shortened by mechanical damage while passing over the sheave.

Although it is perfectly feasible to make any type of tramway fully automatic, it is usually not practical to dispense entirely with an attendant at the loading terminal. The tendency of rock to clog in bins and gates is too great to trust to an unattended mechanism.

The location of the waste dump is a matter of importance. These dumps almost always take fire, and for that reason the dump should not be close to groups of dwellings or mine air intakes. Care should be taken not to build dams of waste directly across a hollow, as these are apt to impound water during heavy rains and wash out. If the pile is on fire, the situation is much worse. If the hollow is narrow, the impounding of water can be to a large extent prevented by making the dump diagonally across it. Wide valleys and stream courses should not be filled up.

Dumps located on steep hillsides are open to the objection that they may start landslides during wet weather; and where there are tracks or buildings at the foot of the slope or on the hillside, serious damage may result.

TRANSACTIONS A. I. M. E. (1934) vol. 112, Milling Methods, is ready for distribution.

There are 45 papers in this volume which totals 977 pages. The papers are devoted variously to subjects under the general heads: Crushing and Grinding, Classification and Settling, Flotation Theory and Practice, Flotation of Nonsulfides, Magnetic Concentration, Gold and Silver Milling and Cyaniding, Milling Practice—Nonmetallic Minerals, and Milling Practice—Iron, Tungsten and Base Metals.

The volume is sponsored by the Rocky Mountain Fund of the Institute; the papers were specially solicited by the Institute's technical committee on milling methods. Price, $5 net; bound in cloth.

NEWS OF MANUFACTURERS

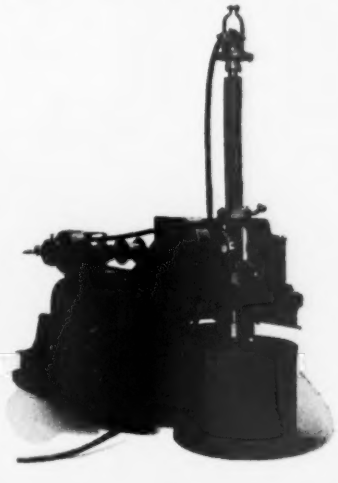
THE OHIO BRASS CO. announces, with regret, the resignation of Glenn H. Eddy, who for the past 10 years has directed their sales promotion and advertising activities. Mr. Eddy will join forces with the Hagan Corporation, of Pittsburgh, Pa., on May 1.

ANNOUNCEMENT is made by the Mine Safety Appliances Company of their new bulletin, "MSA Safety Equipment for Pits and Quarries." Copies may be obtained upon request to the company at 201 Braddock Avenue, Pittsburgh, Pa.

A FULL description of the Hydroseal Sand Pump is given in the new 12-page bulletin recently issued by the Allen-Sherman-Hoff Company, 225 South Fifteenth Street, Philadelphia, Pa. Copies may be obtained upon request to the company.

THE 32-page catalogue just published by the Sullivan Machinery Company describes its new line of Plus Portable two stage air cooled compressors in four sizes, 105 cu. ft., 160 cu. ft., 210 cu. ft., and 315 cu. ft., available in all desired mountings.

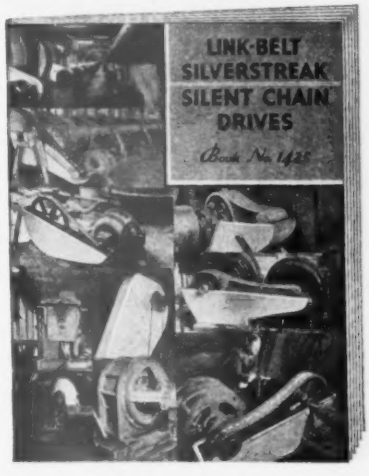
HOLES up to 72 in. in diameter and 50 ft. deep can be drilled with the Calyx Core Drill, and the cores removed for study. Smaller holes (with their cores) up to 11½ in. in diameter and as deep as 2,500 ft., can be produced. The Calyx Core Drill is described very completely and the results of its work is illustrated fully in a new 48-page bulletin just off the press. (Form 9501.) Copies can be obtained from Ingersoll-Rand Company, 11 Broadway, N. Y., or any other branch office.



THE SULLIVAN MACHINERY COMPANY, Chicago, Ill., announces in an eight-page bulletin its new 55-lb. rock drill, L-9. Copies may be had upon request.

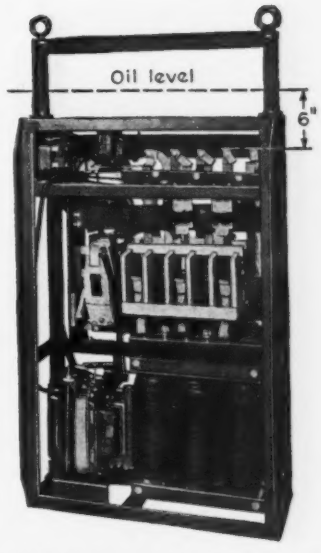
ATLAS POWDER COMPANY, Wilmington, Del., has just published a book on "The Aqueducts of the Pacific." This is not so much the story of Atlas as it is the story of progress on the largest construction job now going on. A limited number of copies is available for distribution.

FOLLOWING last year's announcement that its silent chain had been given a distinctive "dress" and named Silverstreak because of the silvery streak it describes in operation, Link-Belt Company, Indianapolis, has recently released a highly pictorial 32-page book No. 1425, which presents this modern high speed chain drive in terms of what it has done and can do for its users.



Many types of applications, on both long and short centers, are shown. A copy will be forwarded to any interested reader upon request, which may be addressed to the nearest office of the company.

A NEW LINE of oil-immersed magnetic starters of the reduced-voltage, autotransformer type, in which all arcing contacts are 6 in. under oil, has been developed by the General Electric Company, Schenectady, N. Y. An induction-type temperature overload relay is used, also mounted in the oil. Either current-limit or time-limit acceleration is available, and an ammeter attachment can be



supplied if desired. Ratings range upward to 600 amperes at 600 volts and 200 amperes at 2,500 volts.

KOPPERS-RHEOLAVEUR COMPANY, Pittsburgh, Pa., announces that they have acquired the exclusive license to manufacture, sell, and license for use the Menzies Cone Separator. Mr. W. C. Menzies will continue to take an active interest in the development and application of this apparatus. A branch office and laboratory has been opened in the Coal Exchange Building in Wilkes-Barre, Pa., under the management of Mr. Stanley Glidden, from which this equipment will be sold and serviced in the anthracite coal region.

Koppers-Rheolaveur Company is prepared to give complete laboratory, engineering, and construction service to the anthracite industry in the preparation of anthracite coal for market, and they solicit your inquiries.

R. G. MOELLER CO., 14415 Meyers Road, Detroit, Mich., have been appointed distributors of Link-Belt crawler shovels, cranes, draglines, and locomotive track-type cranes. The Moeller organization was established in 1924, and has twice moved to larger quarters to take care of increased business. It is headed by R. G. Moeller, president; O. H. Baker, secretary; C. C. Huebner, vice president; T. C. Moeller, sales manager.

THE Gould Storage Battery Corporation has removed its Chicago office at 32 W. Randolph Street, to a new district office and service station at 227 Garvey Court, Chicago, Ill.

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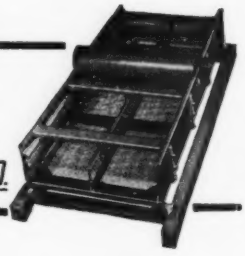

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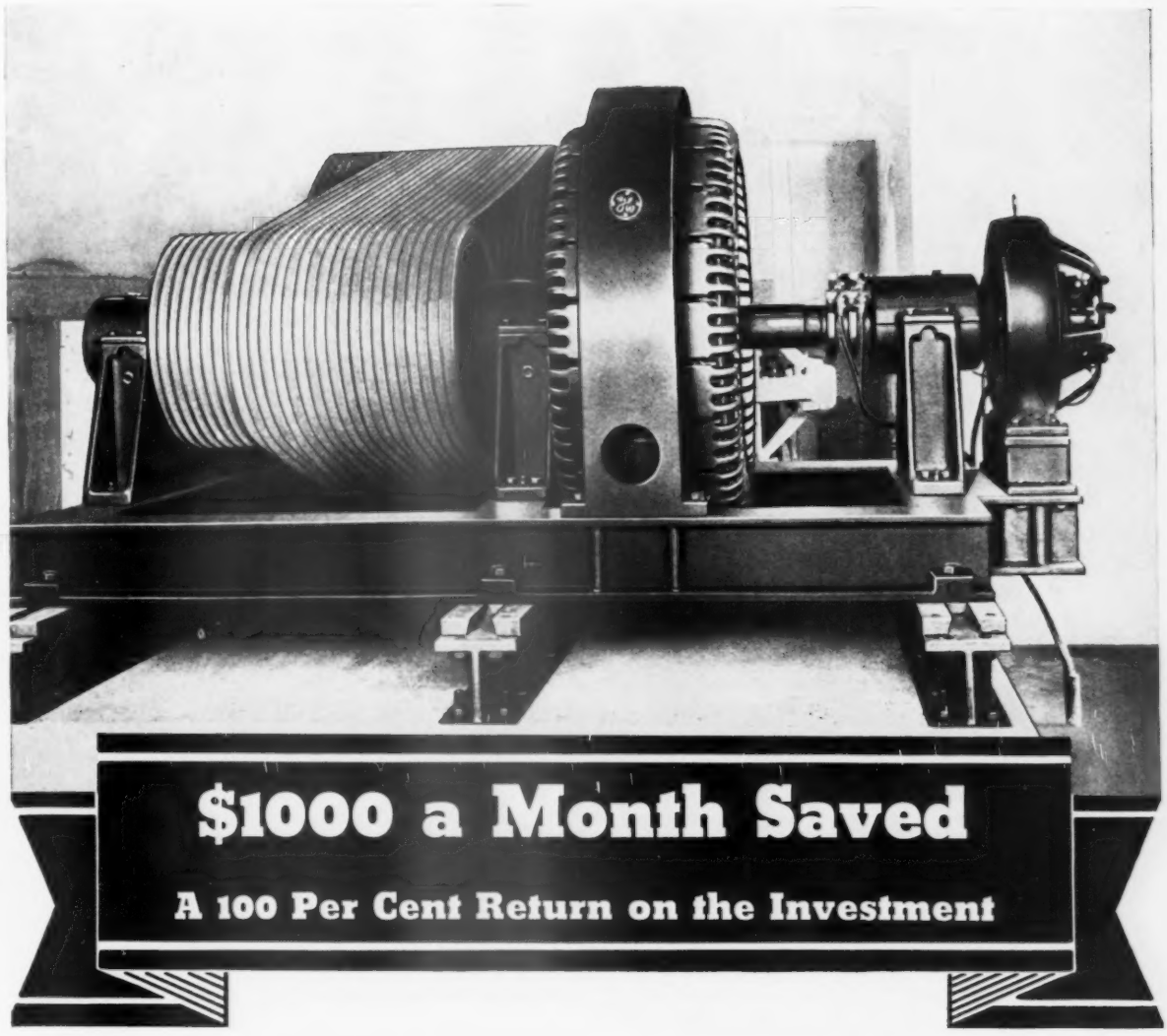

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